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CONTENTS.

	PAGE
Pleural and Pulmonary Secondary Osteo-Sarcomas. (Illustrated.) By E. R. LeCount, M. D.	361
Aretaeus the Cappadocian. By Eugene Fauntleroy Cordell, M. D.	371
Summary of Results Obtained, and Features of Interest, in Two Hundred and Fifteen Consecutive Cataract Extractions. (Illustrated.) By Samuel Theobald, M. D.	377
Correspondence	380
Notes on New Books	381
Books Received	391
Index	393

PLEURAL AND PULMONARY SECONDARY OSTEO-SARCOMAS.

By E. R. LeCount, M. D.

(From the Pathological Laboratory of Rush Medical College, Chicago, Ill.)

The effort Virchow made in his account of bone tumors [1] to separate the benign from the malignant more definitely than had been done before, is the chief impression to be gained from its reading. The care with which he sought literature for illustrative cases is additional evidence, were any needed, that clear notions of what constituted an osteo-sarcoma, or in other words which of the growths from bone were to be feared the most, were not prevalent at that time. A few years previously Müller [2] had designated as "osteoid" certain tumors of the periosteum and collected and supplemented the reports dealing with them. Virchow emphasized their malignancy too and cited as examples, and with some detail, those described by Weber,[3] Wilks,[4] Fergusson and Beale,[5] Sedgwick,[6] Rokitansky,[7] Birkett,[8] Stanley [9] and Paget.[10]

Cancer of the bone (*Knochenkrebs*) was still considered as different from bone sarcoma, nor was this misconception dispelled by Virchow. He was similarly earnest in pointing out the malignant features of the myelogenous sarcomas. To the reports by Gerlach,[11] Hutchinson,[12] Foster,[13] Henry,[14] Cock and Wilks,[15] Lebert,[16] Grohe [17] and Weber,[18] he added one personal observation. Several of these dealt with the so-called myeloid or giant-celled sarcoma the relative benignancy of which seems to have been as greatly debated then as it is now.

In Broca's contemporaneous work the context indicates even more clearly that the dissemination of these tumors was to some degree a mooted question. In addition to mentioning that several museums contained preparations to substantiate his assertion that metastasis does occur, Broca [19] refers to two previously reported observations of secondary and distant growths from "*tumeurs purement osseuse.*" One of these citations is of considerable historical interest and serves to denote the comparative ignorance then (1793) prevalent in regard to the metastasis of tumors; it is the following statement by Ballie: [20]

[1] Die krankhaften Geschwülste, Berlin, 1864-1865.
[2] Müller's Archiv, 1843, 396.
[3] Cited by Müller.
[4] Guy's Hosp. Rep., 1857, 3d Series, 3, p. 156.
[5] Tr. Path. Soc., London, 1853-1854, (5), 321.
[6] The British and Foreign Med. Chir., Rev., 1855, (31), 158.
[7] Wchnbl. d. k. k. Gesellsch. d. Aerzte in Wien, 1857.
[8] Guy's Hosp. Rep., 1857, 3d Series, 3, p. 338.
[9] A Treatise on Diseases of Bones, 1849, London and Philadelphia, 143.
[10] Lectures on Surgical Pathology, London, 1863, p. 506.
[11] Ztschr. f. rat. Med., 1847, (6), 377.
[12] Tr. Path. Soc., London, 1857, (8), 346.
[13] Ibid, p. 389.
[14] Ibid, 1858, (9), 367.
[15] Med. Times and Gaz., 1859, (1), 70.
[16] Traité d'anatomie pathologique, 1857-1861, Paris, 194.
[17] Lehrbuch d. chir. Operationslehre, A. Bardeleben, 1863, I. 566.
[18] Chirurgische Erfahrungen (etc.), 1859, Berlin, 364.
[19] Traité des Tumeurs, Paris, 1866, I, p. 291.
[20] The Morbid Anatomy of Some of the Most Important Parts of the Human Body, 1820, Phil., 3d American Edition, 48.

Part of the lung is occasionally converted in a bony substance, but this is a rare disease . . . . In the only instance which I have known of this complaint the process would appear to have been rapid. There was great difficulty of breathing before the person died, but this difficulty had only been for a very few weeks. Each of the lungs was undergoing the same change of structure which had made considerable progress. In the particular case to which I allude there had been a very strong disposition to form bone in the constitution. A very large bony tumor had been found round one of the knees of this person; and very soon after the knee and leg were removed by amputation, the difficulty of breathing began, which was occasioned by a part of the lungs being converted into bone.

That secondary tumors from those primary in bones occur in the lungs and more frequently than from tumors elsewhere have now long been matters of common knowledge. Many of the observations which, supplementing the work of Virchow, helped to definitely establish these facts were collected by Gross,[21] and another summary was made in the following year, 1880, by Schwartz.[22] At present surgical literature contains many other statistical contributions to this subject which include among other data, the relative frequency of metastasis and other facts connected with its occurrence bearing upon the prognosis. During the last fifteen or twenty years such articles have been especially numerous; many are based upon cases treated at some particular clinic or according to some special surgical procedure;[23] in fact the development of knowledge concerning bony tumors since Virchow's work appeared has been notably in the practical phases indicated, of diagnosis, treatment and prognosis. Some minor embellishments, such as placing the "bone cancers" with osteo-sarcomas, for example, and additions to the finer histological structure of osteo-sarcomas in general have been made, but to a very large degree the morbid anatomy of the tumors of bone including both the primary and secondary growths is as Virchow left it.

Through the kindness of Dr. Warren H. Hunter,[24] I recently had opportunity to study an extensive metastasis of an osteo-sarcoma in the lungs and pleura. By this examination and a review of reports of other somewhat similar lesions, I have been impressed with the interesting relations these secondary growths may occasionally have for both clinical medicine and surgery, but still more by the unusual features malignant tumors of the bones may occasionally manifest, features exceptional for even such widely diversified phenomena as result from tumor growth generally. The investigation of malignant tumors in recent years has been largely directed to questions of growth, transplantability and other problems of perhaps broader biological nature than the search for a parasite which in spite of the persistent endeavors of many has as yet proven so fruitless.

The osteo-sarcomas with their secondary growths possess many relations to this more recent direction of investigation, indeed the continued growth of transported tumor cells resulting in metastatic tumors may depend upon factors quite identical with those responsible for the successful transplantation of spontaneous tumors of animals. These statements pertain equally well to a few other malignant tumors not ordinarily thought of as either carcinoma or sarcoma, for example the hypernephromas, chorioepitheliomas and the thyroid growths which are so prone to produce secondary tumors in bones.

For these various reasons it will not perhaps be deemed untimely to report with some detail the results of the examination of the intrathoracic secondary growths received from Dr. Hunter together with some considerations they have given rise to.

As interesting perhaps as any other result was the realization of the inadequacy of accounts of bone tumors, especially the text-book descriptions, in dealing with the secondary growths; there is in them so little to prepare the student for conditions other than those commonly met with. The reasons for this may be many, but certainly when Virchow wrote the chapter on Sarcoma,[25] there was greater need, as already mentioned, of a better understanding of what bone tumors were malignant than of exceptional anatomical features of these tumors or their secondary growths.

The examples of secondary growths in the lungs and pleural membranes which he cited from literature as well as those he selected from his own experience[26] represent, with a few exceptions to be noted presently, the usual conditions still described in the incomplete accounts given in text-books. The characteristics of these secondary growths in all but a few of the cases he used to illustrate metastasis are briefly as follows: Multiple nodular masses often consisting in part of cartilage or bone, predominating in the right lung as a rule, mostly near the surface of the lungs, varying in size from miliary tubercles to apples and showing a disposition to flatten out toward the pleural surface. Although some deviation from this general description exists in some of the accounts he utilized—cases reported by Cock and Wilks[27] and by Grohe[28]—the greatest departure occurs in an observation Virchow himself contributed.[29] This dealt with a soft, velvety, bloody growth covering the entire right lung and very thick on the pleura covering the diaphragm on that side, with compression of the right lung by about two quarts of a thick

[21] Am. J. M. Sc., 1879, 78, 1 and 338.

[22] Des Ostéosarcomes des Membres, Thèse, Paris, 1880.

[23] See in this regard the works of Fischer, Deutsche Ztschr. f. Chir., 1881, (14), 468; Krause, Arch. f. klin. Chir., 1889, (39), 482; Nasse, ibid, 1889, (39), 886; Borck, ibid, 1890, (40), 941; Wiesinger, Deutsche med. Wchnschr., 1898, (42), 668; Ziegler, München. med. Wchnschr., 1895, (42), 621; Reinhardt, Deutsche Ztschr. f. Chir., 1898, (47), 523; Pollosson and Bérard, Gaz. hebd. de méd. et chir., 1899, (46), 985; Werner, Statistischer Beitrag zur Therapie der Unterschenkelsarkom, I.-D., Erlangen, 1901; Kramer, Arch. f. klin. Chir., 1902, (66), 792; Jenckel, Deutsche Ztschr. f. Chir., 1902, (64), 66; Kocher, Beitr. z. klin. Chir., 1906, (50), 118; Haberer, Ztschr. f. Heilkunde, Abth. f. Chir., 1906, (27), 100.

[24] Coroner's Physician.

[25] L.c. Vol. II, 19th lecture.

[26] Numbering from both sources all together 23.

[27] L. c.

[28] L. c.

[29] L. c. II, 339.

bloody fluid; a similar involvement of the pleural layers of the left side which were, however, adherent in places, and scattered tumors in the left lung, one as large as an apple. From his account of the illness in this instance it seems that the metastasis to the pleural surface of the lungs must have taken place when the primary tumor, which was in the foot, was still very small. The patient suffered great thirst, very marked orthopnœa without cough or expectoration. Similar extensive growths as either soft or more bony coverings of the lungs have been noted since, but not frequently. The description by West[30] of soft fleshy vegetations covering the compressed right lung, secondary growths from a primary tibial sarcoma, certainly pertains to a condition much like that depicted by Virchow. The following account of Pitts[31] is worth quoting in full:

The sternum and costal cartilages were found to be intimately adherent to the pleura on the left side and only removed with difficulty. On their removal it was seen that the left pleura was greatly thickened and of a stony hardness and intimately adherent to the thoracic wall, to the diaphragm and to the pericardium. On its removal with the lung it formed a complete cast of the cavity of the left side of the chest. The right pleural cavity was nonadherent and free from new growths. These growths are found in relation with the branches of the pulmonary artery and vary greatly in size; they are very numerous. The surface of the right lung was covered with nodules, umbilicated and of a stony hardness. On section there were strands of new growth running along the connective tissue of the lung, which was resonant on percussion. No other evidences of growth were found.

The clinical history given by Pitts is also indicative of an early metastasis. Following a sprain of the wrist there was two years later slight increase of its circumference which with the enlarged glands at the elbow and axilla were supposed to be inflammatory. An exploratory incision was made of the swelling at the wrist. Two weeks later tumors were found in the leg and thigh, but a tumor growth at the wrist was not suspected until a week later and a few days before three pints of bloody fluid were removed from the left chest; one month later death occurred. The tumor of the wrist proved to be a periosteal tumor. D'Arcy Power also reported to the London Pathological Society[32] plate-like masses of bone in the pleura of the right lung from a tumor of the knee. The lungs were very adherent to the chest walls and doubtless prevented the accumulation of a sanguinous transudate and compression atelectasis. Chifolian and Laignel-Lavastine[33] have reported a diffuse peritoneal sarcomatosis accompanying a diffuse involvement of the pleura with compression of the right lung, lesions secondary to a very bloody osteo-sarcoma in the outer condyle of the lower end of the humerus.

The form of the metastasis in the organs I examined was of the same variety, diffuse involvement of the pleura for the most part. They were removed from the body of a young unmarried Italian woman (C. P.), age 21, who entered the Cook County Hospital on December 4, 1907, in the surgical service of Dr. Humiston. She was in a dying condition. A thoracentesis had been performed by removing a portion of the 7th right rib and a fistula existed at this point. Her abdomen and extremities were swollen, there were numerous regions of dulness over the lungs, and breathing was labored. It was thought that she was in the last stages of tuberculosis of the lungs with an empyema of the right side, and before a thorough examination was made death occurred, nine hours after admission. At the post-mortem examination, conducted by Dr. Hunter, a remarkable and extensive formation of bone was discovered in the pleural cavity. So far as could be learned the conditions in the thorax were responsible for most of the symptoms and had chiefly interested a number of physicians through whose hands she had passed; moreover, they were of such an exceptional nature that at the post-mortem examination a careful search for related lesions was omitted; neither clinically nor at the post-mortem examination was the real nature of the disease ascertained.[34]

Macroscopic Description.[35]—The right lung (see Fig. 1) is scarcely as large as a good sized fist. It is 11 cm. vertically, 7 cm. through the greatest anterior-posterior, and 4.5 cm. through the greatest transverse diameter. It is flattened toward the median line and covered with a hard newly-formed coating which has fixed and helped to suspend it in the pleural cavity. Between it and the right leaf of the diaphragm which is similarly involved the hand may be inserted edgewise. This new covering of the lung is reflected over such portions of the parietal pleura as are present, viz., that covering parts of the pericardium externally and the right leaf of the diaphragm.[36]

This coating is a dark reddish color; it is covered here and there with bits of yellowish fibrin in thin sheets and flaky masses. For the most part it is of bony hardness and beset with rounded elevations which have coalesced in many places and vary greatly in diameter, 2 mm. to 3 cm. Near the tendinous portion of the right half of the diaphragm there are two such bosses 1 and 2 cm. in diameter, respectively, and elevated 1 and .5 cm. from the general level. Just external to these the diaphragm is folded somewhat there being on its under surface a saggitally directed furrow 4 cm. long, and corresponding to this on its upper surface a long oblong elevation. The sole-leather-like consistency of the diaphragm indicates that this fold has existed for some time. It would be impossible to smooth it out now. The nodules are less marked on the lung, but from the lower border and in front there are two projecting downward nearly as large as those on the diaphragm, one of them nipple-shaped, the other not as prominent, but larger with bifurcated apex (Fig. 1).

From the diaphragm this new covering extends upward covering the outside of the pericardium where this structure faces the right pleural cavity and although the pericardium is smooth within, it is hard and board-like in its firmness and irregular within from the growths in its outer layers, of the nodules in the overlying pleura.

After cutting away the outer half of the right lung with a saw

[30] Tr. Path. Soc., London, 1884, (35), 84.
[31] Tr. Path. Soc., London, 1886, (37), 374.
[32] Transactions, 1889, 40, 293.
[33] Bull. Soc. Anat. de Par., 1900, (75), 575.

[34] The lower extremities were œdematous and masked the enlargement of the upper end of the right tibia where the primary tumor was located.

[35] These secondary growths were demonstrated at the meeting of the American Association of Pathologists and Bacteriologists in Ann Arbor, 1908.

[36] The entire costal pleura was similarly altered according to Dr. Hunter.

(Fig. 2) the extent to which the new formation of bone in the pleura has increased the weight of the structures becomes very apparent, for holding the outer half of this lung in the hand reminds one of a large shell or the half of a cocoanut in its weight and consistency. Where this vertical saggital section cut across the bony covering to the lung there is exposed a remarkable similarity to the tables of the skull as they appear when cut across in removing the calvarium, especially is this true of the covering for the posterior part of the lung. Here the lung has been covered by two tables of bone, yellow on their cut surfaces with a distinct marrow between them, resembling diploë (*c* and *C*, Fig. 2). For a distance of 7 cm. this vertical saggital section exposes such a coating and for the same distance it is quite uniformly 1 cm. in thickness. The likeness to the tables of the skull is increased by the evenness and regularity of the inner surface facing the lung; its section forms quite a straight line. The outer surface is more irregular. The inner of these two tables is 1 mm. thick, the outer 2 mm. Between the two tables there are connecting bridges of bone at intervals, separating in some places red marrow, in others yellow. In this single section the bony covering is thinner than elsewhere. Passing upward over the apex from behind where these two tables occur, the layer of bone over the apex varies from 4 to 5 mm. in thickness and on the anterior surface it diminishes slightly in thickness downward, but on the whole its regularity and rather uniform appearance is quite remarkable.

The existence of two tables only occurs behind.[37] In front, and at points corresponding to the location of the interlobar fissures in such a small and compressed lung, there are exposed by this section two extensions from the outer bony shell into the lung. The lower is 3.5 cm long, the upper slightly shorter; both are made up of compact bone and 4 mm. in width quite uniformly. Except for a few small discrete nodules near the apex, bone does not appear within the lung at other points on either of the two surfaces exposed by this single section. The bronchi where cut across, as well as the cartilages of the larger ones, show no alterations. None of the discrete nodules mentioned are connected with bronchial cartilages. The parenchyma of the lung is dark red and in the fresh condition apparently would have been crepitant.[38]

The left lung appears slightly smaller than normal, but it has evidently suffered no compression from fluid in the left pleural cavity. There are fibrous adhesions on the upper and outer part torn in removal of the organ and partly covering the flat, thin button-shaped growths, cartilaginous or horny in consistency, which are found in a large part of the exterior. These are not on the pleura, but within and beneath it. Where they are larger their subpleural location is more apparent. At the margins, especially the lower outer angle of the lung, the flat nodules extend through the lung so as to present on both the outer and diaphragmatic surfaces. Their size varies. Some are 1 to 2 mm., some 3 to 4 cm. in diameter as measured on the exterior of the lung. The small ones seem to contain a hard kernel, the enveloping tissues being softer and yet firmer than the adjacent lung tissue. The largest nodule is in the anterior margin of the upper lobe lying over the base of the heart and when sectioned (with a bone saw) the surfaces exposed possess all the characteristics of a rather close-meshed cancellous bone with red marrow in the interstices. This nodule is 4 cm. long and 2.5 cm. in thickness. Its external surfaces are even with the two surfaces of the lung in this situation and the primary location was apparently on the inner or mesial surface of the auricular lobe, from whence growth occurred forward, for the inner mesial surface is broad and flat, the other presenting on the anterior surface of the lung is irregular with deep indentations between the rounder projections. This is a solid mass and has replaced all the lung tissue in the district occupied. Several similar, but smaller, nodules occur along the posterior margin of the lung, that surface lying in the vertebral groove; some are 2 cm. in diameter, all are relatively thin and flattened out against the external surface.

In front of the aortic arch and opposite the beginning of the innominate artery, there is a lymph gland as large as a hickory-nut (2 cm. in diameter) roughly spherical and hard as eburnated bone. After sawing off a little of the outside the underlying tissue is yellow and possesses every resemblance to quite compact bone. There are regions of coal pigment in this bone. The lining of the trachea and larger bronchi is smooth and unchanged. The heart has no noteworthy changes.

That the foregoing account is descriptive of a secondary osteo-sarcoma in the lungs and especially the pleura, notwithstanding failure to demonstrate the primary tumor at the post-mortem examination, was rendered highly likely by the facts learned concerning C. P. previous to her entrance to the Cook County Hospital. She entered the Columbus Hospital, Chicago, in the service of Dr. W. P. Verity, four months before her death, for trouble with her right knee, thought to be "white swelling." Fluid was discovered in her chest and this was removed several times during the six weeks she remained there, a diagnosis of hemorrhagic pleuritis, probably tuberculous, being made. Nine weeks before death she returned to her home and was found to be suffering again from impeded respiration by Dr. G. F. Schreiber,[39] who removed half a gallon of a non-purulent fluid from the right pleural cavity and a few days later a gallon. He then inserted a tube into this cavity through an opening made by resecting a portion of the seventh rib. The tube remained in the cavity for three weeks, according to Dr. Schreiber, and as previously stated when admitted to the County Hospital a fistula was still present at this point. Dr. Schreiber considered the knee trouble tuberculous synovitis and the thoracic involvement an empyema of the same nature. He was unable to learn of any other tuberculosis in the family and he strongly urged an Estlander operation to close up the empyema cavity. In his letter to me he refers to a tuberculous abscess in the gluteal region and to having experienced no difficulty in the thoracentesis or the resection of the rib in entering the chest wall.

In addition to the support received from these few clinical details, there was—for considering these bony intrathoracic growths as secondary tumors—the additional reason that their gross characteristics were not those of either the primary stalacite osteomas of the lung,[40] or the primary tumors of the bony thorax.[41] Nor was there any resemblance in these extensive changes found in the lungs to the comparatively small masses of bone in the lung described by Pollack[42] and explained by him as a metaplasia phase of the cicatrization about coal deposits and necrotic tissue. These various reasons were all justified by procuring the primary tumor one year after

[37] Further sectioning was not done on account of the museum value of the material.

[38] It was hardened before being sectioned.

[39] To whom I am indebted for most of the clinical history.

[40] See the review of these by Arnsperger, Ziegler's Beiträge, 1897, (21), 141.

[41] Quénu and Longuet, Rev. de Chir., 1898, (18), 365.

[42] Virchow's Archiv, 1901, (165), 129.

burial.[42] Only the upper part of the body had been affected by the embalming fluid and post-mortem changes were in spite of the embalming, far advanced.

The tumor in the upper end of the tibia (Figs. 3 and 4) envelopes the upper end of the bone as a sheath of stony hardness which in places rise 2 to 4 mm. higher than the articular surfaces for the femur condyles. This sheath is fairly uniform in its disposition and thickness. It fills the cavity below the head where the head joins the shaft in such a manner that the circumference 3 cm. below the upper end of the bone is 24 cm. (the normal is about 15 cm.) and 7.5 cm. below the upper end the circumference is 21 cm. (normal about 10.5 cm.). A little lower this sheath of adventitious bone ends rather abruptly by curving almost horizontally inward to the shaft which below this point is normal externally; the entire length of the bone so ensheathed is 10 cm. of the upper end. The exterior of the growth is nodular in front and more flat behind, the coalescent nodules in front are as large as the ends of hen's eggs. Small particles of bone are readily detached from the outer surface and the impression that the growth has taken place from the periosteum outward as projections which have become closely set together is increased by an appearance behind where running upward from the inner margin of the shaft across the head of the bone there are parallel markings like the veins which mark the stratification of superimposed layers of stone in a ledge or outcropping. Here the appearance suggests that the growth has occurred as parallel sheets of bone growing outward from the shaft. Below and externally there is a defect in this sheath which appears as though a round blunt instrument had been driven through it from before backward and a little downward. The two terminal phalanges of the little finger fill this defect completely and its walls are rough, irregular and composed of fine trabeculæ which look broken.

Above as already stated this sheath of bone rises higher than the articular surface. It surrounds the upper end of the bone so that viewed from above, the end of the bone has a zone of tumor all about it, but this zone is markedly thicker and more abundant on the front and inside of the articular surface for the inner condyle of the femur where it measures 1 cm. in thickness directly in front diminishing gradually backward. It fills in the notches between the articular facets both in front and behind, and in front there are thin extensions of the tumor growth over both articular surfaces. That over the external facet extends inward from 3 cm. of its antero-internal margin, a maximum distance of 6 mm.; that on the inner facet is roughly circular, 5 mm. in diameter and located near the inner margin; for the remainder the articular surfaces are unaltered. The fibular facet too, is unchanged although it is so surrounded by the sheath of bone that it is a smooth, flat bottom for a shallow pit. The head of the fibula is normal.

When sectioned vertically by sawing saggitally the surfaces exposed are like the exterior, hard and bony throughout (Fig. 4). On these surfaces the cortex of the former shaft, apparently but little altered, is visible the entire length of the surfaces. The bone which has grown about the tibia measures 2 cm. behind and 17 mm. in front, the maximum thicknesses measured from the outside of the cortex. Many of the trabeculæ of the former normal cancellous bone in the head of the tibia are also visible on the surfaces. The medullary cavity, the outer sheath and the spaces in the cancellous bone of the tibial head are all filled with bone with meshes so fine and regular that even with a hand lens it is uniformly and finely granular. The markings of outward growing trabeculæ and spiculæ from the shaft which were expected are entirely absent, in fact the appearance of these surfaces in its evenness is not very unlike that which would be found had a wax cast of the growth been sectioned. How far down the marrow cavity was filled by the bony growth is a matter of conjecture since only the upper end of the tibia, as shown in Figures 3 and 4, was obtained.

The secondary growths in the lung and pleura produced by metastasis from this bony growth in the tibia, are quite like those presented in the reports by Virchow, West, Pitts, D'Arcy Power, Chifolian and Laignel-Lavastine in the large amount of surface of the lung involved by the coalescent secondary growths, in the compression of the lung by a bloody transudate and in the formation of bone in the secondary growths. Not all of these features were present in each instance, for example as already has been stated the diffuse growth on the pleuræ described by Virchow was soft and velvety, in the right pleura of C. P., the young Italian woman, there was a diffuse bone formation; the report by D'Arcy Power deals with plate-like masses of bone. Whatever the variations, these pleural metastases should be associated as one group or form of secondary growths possessing as a common characteristic the disposition to result in an involvement of the pleuræ which may be referred to as diffuse, although it is without doubt in most instances disseminated at the beginning, the large amount of pleural surface involved being due to the subsequent coalescence of adjacent nodules. The term pleural may also be open to some criticism for in all liklihood the process is essentially subpleural, at least in part, and consists of a spreading out or flattening of the nodules by growth of the tumor cells in the subpleural lymph channels."

In this connection reference may be made to the diffuse "chondro-myxo-sarcoma" which is definitely placed in the literature as a primary growth of the pleuræ by Busse,[45] in a report which includes no mention of the bones other than those of the thorax. In view of the early metastasis which occurs not infrequently with osteo-sarcoma[46] his explanation of its origin from the pleura is not likely to satisfy the critical reader; there is considerable similarity between the tumor he has described and secondary growths of the same nature as they occur in the pleura.[47]

An entirely different condition and one resulting at times in at least some clinical differences, for example the failure to obtain fluid on thoracentesis, is produced by the pedunculated secondary pleural growths from tumors of bone.[48] The cases

[42] Great credit is due Mr. Hoffman, Coroner of Cook County, for his aid in securing consent of the relatives for an exhumation.

[44] Lobstein—Lehrb. d. path. Anat., Stuttgart, 1834, I, 371—observed a soft pleural metastasis made up of coalescent nodules from a tumor of the hand, but the exact origin of the primary tumor is not evident from his account.

[45] Virchow's Archiv, 1907, (189), 1.

[46] This term osteo-sarcoma is used throughout this article as referring to a malignant tumor originating from bone.

[47] Since the foregoing was written, Busse's contribution has been rather severely dealth with by Ribbert—Virchow's Archiv, 1909, (196), 341—who believes that the growth described by Busse originated in the lung.

[48] Craigie mentions the "numerous pendulous and sessile tumors" of the pleuræ in connection with fungus hematodes (Elements of General and Special Pathological Anatomy, 1828, Edinburgh, 742).

reviewed by Virchow contained one instance of this form of metastasis in the observation by Cock and Wilks[49] of a pedunculated secondary tumor of the pleura the size of the heart. In the examination of the body of a boy, 15 years old, whose leg had been amputated for a tibial sarcoma by Dr. F. A. Besley,[50] eleven months before death, I found remarkable examples of these pedunculated growths in each pleural cavity. On the right side[51] there was one larger than the normal pleural cavity for this age, 15 years, and by it the heart was pushed to the left, its right border being opposite the left border of the sternum. This large mass had become loosened from its original pulmonary attachment and was planted sessile on the costal pleura; two large separate growths on the left side were pedunculated, the larger being attached by a remarkably slender pedicle. There were also growths within each lung. These intrathoracic tumors had pushed the liver down so that its upper border lay opposite the costal arch. Considering the large amount of tumor tissue in the thorax the symptoms were not of great severity.

There are several interesting variations from the usual textbook descriptions of the *intrapulmonary* tumors resulting from the transportation and location there of the cells of bone tumors. One is in the large size the growths in the lung may attain. In one of the two remarkable cases reported by Birch-Hirschfeld,[52] there was an enormous secondary tumor in the right lung pushing the diaphragm down and extending upward to the third rib; on the left side there was another large mass which grew through the diaphragm and formed below in contact with the spleen a nodule the size of a fist.[53]

Kuster[54] reported, from a femur sarcoma, secondary tumors in the thorax which on the right side grew through the diaphragm and on the left produced a mass the size of a child's head. Allin,[55] mentions "an immense deposit at the base of the lung" secondary to a humerus sarcoma; many of the smaller secondary tumors in the lungs were hard. In the left side of the chest of a 15-year-old girl and from a femur sarcoma, Meakin[56] states there was found "a large mass occupying the whole of the left side of the chest with the exception of a small space above the level of the second rib. It appeared to have replaced the whole of the left lung with the exception of the extreme apex." Other exceptionally extensive replacements of the lung tissue by these secondary tumors are reported by Durham,[57] Bösch[58] and Rose.[59]

It is of great clinical value to remember that not only the observers of these large secondary intrapulmonary tumors, but also those who have met with the enormous pedunculated intrapleural growths have quite uniformly commented upon the disparity between the size of the secondary tumors—the large amounts of the thoracic cavity they occupy—and the relatively few symptoms they produced. This was also noted many years ago by Albers.[60]

Reference has already been made to the nodules in the lungs in C. P. containing hard masses in their central portions. The bone was produced in the centers as the histologic examination demonstrated. Many reports contain references to a similar structure for the secondary tumors in the lungs or pleuræ, in fact it would seem to be by no means unusual.[61] On the other hand there are accounts of similar secondary tumors, osteo-sarcomas, with the bone formed on the outside. One of the reports Virchow used, that by Birkett,[62] concerned such metastases. Birkett states that "some were softened in the center and reminded one of the hollow in the original growth from the arm," and Wilks[63] in discussing these same secondary growths that they were "surrounded by bony shells composed of true osseous structure." Jackson[64] mentions as the largest secondary growth in the lungs a filbert-sized nodule in which "the outer part only was hard forming a shell around the softer interior." Perhaps the best example of this disposition of the secondary tumor to reproduce in the lungs this feature of the primary tumor, for this is indeed the process, is to be found in the oft-cited report by Oberst[65] dealing with the metastasis of a central giant-cell sarcoma of the lower end of the femur. In both lungs were many pea- to walnut-sized secondary tumors, most of them soft and full of blood; some had ruptured during life and in the right pleural cavity were 2.5 liters of bloody fluid; some of the larger tumors had about them a thin shell of bone (*schalige Sarkom*).

There is not much reason to doubt the essential similarity of the process described by Fagge[66] although he mentions no bone on the outside of the nodules. Not all of the secondary tumors in the lungs Oberst observed had bone about them. Fagge's report concerned mainly the purpura hemorrhagica associated with multiple sarcomas following a femur sarcoma. "In the lungs there were five or six scattered secondary nod-

[49] L. c. See also Tr. Path. Soc., 1858-1859, (10), 244. Also the illustration of the museum specimen in Cathcart, "The Essential Similarity of Innocent and Malignant Tumors," Bristol and London, 1907, p. 34, Case 9.

[50] The primary tumor is described in Surg., Gynec. and Obstet., 1905, (1), 412.

[51] See the description by Dowling, Surg., Gynec. and Obstet., 1907, (4), 153.

[52] Arch. d. Heilkunde, 1869, (10), 468.

[53] The description by Chaissaignae—Gaz. d. hôp., 1856, (29), 442—of a very large secondary tumor in the chest, from a primary tumor of the ankle should probably be considered as a large intrapulmonary secondary osteo-sarcoma although Virchow uses this report to illustrate "parosteal tumors."

[54] Arch. f. klin. Chir., 1870-1871, (12), 630.

[55] Med. Rec., 1878, (13), 116.

[56] Tr. Path. Soc., London, 1895, (46), 33.

[57] Tr. Path. Soc., London, 1883, (34), 265.

[58] Ueber einer Fall von Osteosarkommetastasen der Lunge, I.-D., 1889, Würzburg.

[59] Deutsche med. Wchnschr., 1890, (16), 913.

[60] Erläuterungen zu dem Atlasse der pathologischen Anatomie, 1833-1846, Bonn, III, 418.

[61] Virchow, Deutsche Klinik, 1858, (10), 481; also Hillier, Trans. Path. Soc., London, 1855, (6), 317.

[62] L. c.

[63] Guy's Hosp. Rep., 1857, 3d Series, III, 158.

[64] Tr. Path. Soc., London, 1866, (17), 209.

[65] Deutsche Ztschr. f. Chir., 1881, (14), 409.

[66] Guy's Hosp. Rep., 1881, 3d Series, (25), 1.

ules which repeated in a striking manner the characters of the primary growth. They were of a reddish color and projected above the level of the rest of the surface. But they felt quite soft and when they were cut into a quantity of blood squirted out of them and they collapsed." Adams [67] also observed such metastases.

A fifth variation to the appearances of the intrathoracic secondary tumors from the location of tumor cells in the respiratory circulation, is due to the growth of tumor tissue in the pulmonary artery and its branches. The records of this occurrence which I have been able to find have concerned mainly enchondromas, tumors for many years supposed to be strictly limited in their growth, and especially the large enchrondromas of the pelvic girdle or the shoulder bones. To limit consideration of these intravascular growths to the vessels within the lungs would give but a limited notion of the process. It is common knowledge that a tumor originating from bone is disposed to grow into the blood vessels when it acquires features of malignancy, but why the most remarkable of these intravascular and intracardiac growths should be from tumors composed chiefly of cartilage is difficult to state; the assumption that they result from the production of an intercellular substance—the ground substance of cartilage—which does not readily disintegrate so as to allow of the loose-cell embolism common to osteo-sarcomas in general, is obvious and probably in some measure justifiable. The old and now quaint account by Cheston [68] of a continuous growth of cartilage which filled the thoracic duct to distension associated with multiple chondromas of the lungs, both resulting from a large enchondroma of the pelvis should be registered with the intravascular growths.[69] In Paget's report of the metastasis following a similar growth the process of intravascular extension is thus described: [70] "The lower lobe of the right lung was hollowed out into a large sac, containing greenish pus and traversed by hard coral-like bands, which proved to be branches of the pulmonary artery plugged with firm white substance intermingled with softer cancerous matter resembling the great mass of disease in the pelvis." [71] Weber [72] in the metastatic tumors of the lungs, made up of cartilage chiefly, from a similar pelvic growth mentions the "*kalkconcremente in der Grundsubstanz.*" The external iliac, the ileolumbalis, hypogastric and ischiatic veins were filled with tumor which extended to the common iliac; cartilaginous masses were found in the clots in the chambers of the right heart and in the tertiary branches of the pulmonary artery. The conditions described by Ernst [73] are still more remarkable. The renal, suprarenal, left spermatic and phrenic veins were all greatly distended with growths from an enchondroma arising in the twelfth thoracic vertebra; the vena cava to the heart was full of similar tumor tissue and although there were no tumor masses in the heart, just above the pulmonary valves masses occurred the size of a finger which were continued into all the branches of the pulmonary artery. No secondary tumors other than these intravascular growths were found in the lungs. There was, therefore, from the primary tumor to the peripheries of the pulmonary circulation a continuous growth of tumor with the exception of its interruption in the right auricle and ventricle. Birch-Hirschfeld [74] also has reported similar masses filling the branches of the pulmonary artery from an enchondroma of the shoulder.

Although it is true that most of these extensive intravascular growths have been cartilaginous metastases, there are numerous reports dealing with the formation of bone-containing metastatic tumors at some points along the route the tumor cells usually follow; the process is identical no matter what the activity of the cells results in, whether it is cartilage or bone. Hektoen [75] found "hard bony masses" in the metastasis from a tibial sarcoma which nearly filled the right ventricle and produced secondary growths in the lungs.[76]

The cylindrical bony masses, 6 by 1.5 cm. occurring in one lung with nodules of cancellous bone in the opposite lung cherry to hazel-nut in size, both from a femur sarcoma reported by Feistmantel [77] may very well represent growth within the branches of the pulmonary artery.

The possibility of the quite rare so-called "stalactite-osteomas" of the lung having an origin in the metastases of bone-producing cells which locate and grow in the blood vessels is quite natural.[78] As yet, however, there have been no reports in which such osteomas of the lung have been observed with a tumor of some bone. Another, and fully as interesting relationship, is suggested by the excellent description by S. Werdt,[79] of stalactite formations of bone in connection with the wide spread occurrence of multiple amyloid nodules in

[67] Glasgow M. J., 1879, (11), 31.

[68] Phil. Tr. Royal Soc., 1780, (70), 323 and 578.

[69] Cheston states (p. 330): "Upon ſhewing it to ſeveral anatomical gentlemen, they were in doubt whether there might not be yet remaining ſome ſmall cavity in the duct, and were therefore deſirouſ I ſhould take the preparation out of the ſpiritſ to be examined more accurately. Thiſ I readily complied with and it waſ accordingly examined very circumſtantially by Dr. Hunter, Mr. Watſon, Mr. J. Hunter and Mr. Cruikſhankſ who honored me with a viſit for that purpoſe."

[70] Lectures on Surgical Pathology, 1865, Phil., 3d American Edition, p. 653.

[71] A number of writers have confused this with another observation by Paget of metastasis from a primary tumor of the testicle. The citation refers to conditions observed in a young girl 15 years of age.

[72] Virchow's Archiv, 1866, (35), 501. This report is frequently cited since it concerns the transformation to sarcoma of one of the numerous tumors of hereditary familial multiple enchondroma.

[73] Verhandl. d. Deutsch. path. Gesellsch., 1898, (2), 158.

[74] L. c., Case 1.

[75] Med. News, 1893, (63), 571.

[76] Rennenschein, according to Whittaker—20th Century Practice of Medicine, 1895, IV, 379—has reported a secondary chondrosarcoma of the tricuspid valve from a femur tumor; the growth in the heart was the size of a walnut.

[77] Wien. med. Wchnschr., 1904, (54), 2014.

[78] See Klebs, Handbuch der path. Anatomie, Berlin, 1868, II, 691; also Jerusalem, Allg. Wien. med. Ztg., 1901, (46), 246 and 256.

[79] Ziegler's Beiträge, 1908, (43), 239.

the trachea and bronchi. The suggestion of Jerusalem[80] followed the belief so strongly upheld at one time that bone was always of skeletal origin; its more recently experimental production and spontaneous occurrence by processes of metaplasia strongly support the prevalent opinion among pathologists that these stalactite osteomas originate in a chronic inflammation. On the other hand a considerable unanimity exists among the different observers of these rare lesions in the regularity with which they report an intimate relationship between the branching bone and the blood vessels of the lung.[81] Borst even suggesting that the process is one of ossifying arteritis.

The histological examination of various portions of the intrathoracic bony secondary growths from the body of C. P. proved fully as interesting as the foregoing considerations relating to the gross anatomy. Sections were studied after decalcification from lymph glands, both those about the trachea and above the bifurcation, from glands at the bifurcation, from the large spherical gland located opposite the mouth of the innominate, from the diaphragm and the costal pleura, and from numerous places in both lungs. From blocks infiltrated with celloidin coarse series were made by staining every fifth or every tenth section; and portions of the same blocks were sectioned in paraffine after removal of the celloidin. Perhaps the most interesting result of the histological examination is the demonstration that cartilage or any structure resembling cartilage is absent.

The bone in whatever locations examined is consistently like that found in all other locations, the difference being due to the greater or lesser development or growth and consequent variations with which cancellous bone is simulated. In only a few sections (from the apex of the left upper lobe) do the appearances suggest a rapidly growing tumor and even here the process of multiplication of cells has not prevented entirely that other manifestation of their activity, the formation of an intercellular framework which is the first evidence of substratum of bone. In these sections, however, the meshwork of bone is scanty, the compartments large, the cells are numerous and the nuclei in various stages of indirect division readily found. The cells fill up the compartments and in some rather large stretches (occasionally fields, Obj. 16 mm., Ocular, 4 Zeiss) practically none of the bony framework occurs. In these regions whatever there was of grouping or arrangement has been altered by hemorrhage, the cells appear quite loosely clustered in a capillary network which does not differ greatly in size from that surrounding pulmonary alveoli.

In all other locations, as previously stated, the differences are chiefly due to the amount of intercellular substance formed. In sections through very minute nodules the very first evidence of bone is obtainable on the margins where the process is extending (Fig. 5). Some of these nodules are so minute that not only they, but the surrounding alveoli for a slight distance as well, are contained in the field of a low power lens (Obj. 16 mm., Comp. Ocular, 8 Zeiss). In the center the mesh of bone is so close that in places only one or two cells are contained in a single compartment and the framework so wide that several cells side by side would be required to cover the distance across from one space to another. Large vessels occur in the more central parts and the bony framework about them is in some ways quite similar to an Haversian system (Fig. 5). On the edge of such small nodules as this the very first steps in the formation of bone are discernable for here the bone-forming cells have filled up the alveoli and in the centers of such intra-alveolar aggregations a very delicate network of bone occurs, in some respects like a fibrinous exudate, especially in the tenuity of the strands (Fig. 6). The delicate and intricate nature of these earliest meshes of bone is difficult to either adequately describe or illustrate (Figs. 7 and 9). The spaces in many instances are so small as to contain but a single cell, many are too small for that. Where these minute strands have been sectioned at right angles to their long axis their cut ends appear between the cells as rounded objects which are in many instances smaller than the nuclei of the cells. When the elastic tissue about the alveoli is stained by Weigert's method the fibers in many places are wider and heavier than these earliest bands of intercellular substance (Fig. 6). In some of the alveoli the intercellular substance is absent or almost so, and in such situations as well as in the sarcoma-like region mentioned in sections from near the apex of the left lung, opportunity is afforded to examine the cells concerned in its formation.

The cells (Fig. 7) are of various shapes, rarely spherical, more often oblong or eliptical and occasionally much longer than wide and with drawn out pointed ends. In the sarcoma-like region where the formation of bone is less marked, the cells are larger, measuring from 10 μ to 16 μ or even 20 μ in exceptional cells in their longest diameters.[82] In places where the intercellular substance is abundant their long axes average 9 μ to 11 μ. The nuclei are large and possess considerable chromatin. Occasional cells possess more than one nucleus and with a little search cells may be found possessing several nuclei arranged around the peripheral part of the cytoplasm and thus duplicating in some degree the megacaryocytes of bone marrow. In regions where cell multiplication is active and bone formation slight, karyokinetic nuclei occur from which six new nuclei would have formed; also other examples of multipolar nuclear division.

In sections from the diaphragm, the costal pleura, from the one large bony node in the auricular prolongation in the upper left lobe, and from the other places where the development of bone is more marked, the structure is greatly different from the delicate lace-like intra-alveolar network found about the minute nodes. Here wide bands of the bony framework are so abundant that they occupy most of the fields and the spaces between them are rich in blood vessels and in other respects resemble marrow. The bands vary in width (40 μ to 60 μ) although they are fairly uniform. They are the sections at all conceivable angles of a system of connected and anastomosing cylinders of bone containing the blood vessels and perivascular bone-forming and other marrow cells. The absence of any arrangement consistent with a supporting or other mechanical function of this cancellous bone is very conspicuous. For short distances the different parts of the scaffolding may be somewhat parallel, but on the periphery of the lung and in other locations there are reasons to attribute this arrangement to growth along lymph channels.

The absence in these heavy bands of any evidence of lamellar construction approaching closely that in normal compact bone remained unexplained until the intermediate stages of development between the fine lace-like intra-alveolar meshwork already described (Figs. 6 and 8) and these heavy scaffoldings of cancellous bone were studied. In such sections showing lesser amounts of bone production there are great differences in the size of the meshwork, the spaces between the bony trabeculæ. In some, the partitions do not anastomose extensively, but there are pointed irregular projections of bone into innumerable widely communicating

[80] L. c.

[81] See Arnsperger, l. c., 141 and Borst, Verhandl. d. physik. med. Gesellsch. zu Würzburg, 1898, Vol. 32.

[82] From measurements of the red blood cells the shrinkage has been 20 to 25 per cent.

and but partially enclosed regions (Fig. 8). In other sections the mesh is close and quite uniformly of a size to contain one or two cells (Fig. 9). In these and all other modifications there is one common feature the width of these bony partitions (seldom more than twice as wide as the bone-forming cells); in other words the bone-forming cells in this process have been able to form layers of a certain thickness, thicker or heavier layers they presumably were unable to form. These partitions, so uniform in their thickness, no matter what the size of the cavities they surround, have the property of staining more intensely on the margins with basic dyes (Fig. 10). Their paler central portions often possess very minute cavities possibly caused by decalcification. These characteristics of staining make it possible to trace these thin partitions through the complicated and tangled aggregations they form in the heaviest bands where the similarity to compact bone is greatest. In other words, the bony nodules and the sheets of compact bone on the diaphragm and on the right lung and extending into it along the obliterated interlobar fissures are made up of a heavy fromework in which there are primitive lamellæ simulating the lamellæ of normal bone to some degree, lamellæ fairly equal in thickness and staining more intensely at the margins. In the massing together of these thin layers there is, however, very little to remind one of the beautiful order of the lamellar construction of normal bone. The chief similarity perhaps is the very evident tendency to develop parallel or superimposed layers. The one fact which assumes greatest importance and really constitutes the link between the methods of bone formation under normal conditions and in these pleural growths is that already mentioned, *the regularity of the thickness of strata-the bone-secreting or bone-forming cells produced as an intercellular framework.*

The conditions in the lymph glands do not differ so far as the structure of the bone and the proportion between bone and tumor cells is concerned, from those described for the pulmonary subpleural nodes and sheets. In the glands least involved the minute tumors occur in the peripheries of the gland (Fig. 11); in the large spherical and very bony lymph gland over the root of the innominate artery the structure is highly compact, heavy, bony framework and small marrow cavities.

Efforts to demonstrate canaliculi in the intercellular substance by various methods were failures. It is nevertheless likely that they too are present in some greatly altered form. Nor were there found in the marrow cavities any very definite evidences of the production of either red blood cells or leucocytes. In regions where the bone has a large and heavy framework and marrow cavieles correspondingly large there are small cells with intensely staining nuclei. They are about the size of the small lymphocytes and are located about the blood vessels both scattered and in clumps. These cells possess very narrow rims of cytoplasm and the quite general absence of any reticular arrangement of the chromatin in the nuclei such as is generally demonstrable in the lymphocytes, strongly suggest that they may be nucleated red cells. Post-mortem changes in the primary tumor made its histologic examination valueless.

As for the primary growth in the head of the tibia responsible for these secondary tumors, the unbroken regularity and normal contour of the cortex of the tibia as disclosed in the single section made (Fig. 4) is decidedly opposed to its myelogenous origin. Other arguments for its periosteal origin are the large amount of bony tumor tissue without and around the shaft, and the fact that ossification as well as generalization occurs with periosteal tumors much more frequently than with those of central origin;[82] in fact myelogenous ossifying tumors are quite rare. Bennecke, in 1904 was able to find in literature but one example of "enostosis," that recorded by Virchow,[83] to add to his own.[84] Buerger[85] repeatedly mentions perforation of the cortex and apparently as though it had occurred from within, in describing two highly ossified tibial tumors. From the description, however, the tumors are quite like that shown in Figs. 3 and 4 and correspond best with ossifying periosteal growths; there were evidently no metastases in connection with them for Buerger relates but few clinical details. The tumor described by Muir,[87] beginning in the upper end of the humerus, "as hard as ivory all through except at the extreme margins where it could be cut without decalcifying," and filling up the medullary cavity completely as well as that reported by Landow,[88] are also to be considered as periosteal tumors.[89]

Conspicuous notice is given in the French literature[90] to the account by Bouveret[91] of a primary growth of the bony thorax which caused rather wide-spread secondary growths containing bone. The primary tumor was larger (26 by 18 cm.) than an adult head and grew deeply into the right lung. The metastatic tumors developed in the vertebral muscles, the mesentery, subperitoneal tissues, in both kidneys, in the pericranial tissues and subdurally, in the radius, one cubital and the left iliac bones, the subcutaneous tissues and in the heart where there were two; there were none in the lungs. In many respects the conditions described by Bouveret are exceptional. All the secondary growths contained bone; some were quite bony and the bone was centrally located; the secondary tumors possessed no cartilage and Bouveret compared the ossification to the normal intramembranous development of bone. In the larger secondary growths the ossification resulted in the formation of cancellous bone and Bouveret described and illustrated homogeneous intercellular trabecula and osteoblasts quite similar to the structures I examined in the metastatic growths in the lungs and pleuræ of C. P. Janeway[92] also describes ossification and fails to mention any cartilage in the secondary growths in the lungs from a sarcoma of the femur.

In view of the indefinite descriptions of ossification, calcification and even petrification[93] in osteo-sarcomas, which have prevailed in the text-books for so many years, the vigorous and lucid account by Billroth[94] half a century ago, is a striking indication of his clear vision; for he described the for-

[82] Volkmann, Handbuch d. allg. u. spec. Chir. [Pitha-Billroth Chirurgie], Erlangen, 1865-1872, II, 469.

[83] Die krankhaften Geschwülste, II, 42.

[84] Deutsche med. Wchnschr., 1904, (30), 941.

[85] Proc. N. Y. Path. Soc., 1908, (n. s. 8), 111.

[87] Glasgow M. J., 1899, (52), 438.

[88] Centralbl. f. Chir., 1900, (27), 1061.

[89] Bennecke too (l. c.) considers the growth reported by Landow as of periosteal origin.

[90] Dictionnaire enclycopédique des sciences médicales, 1882, (18), 269; Traité de Chirurgie, Duplay and Reclus, article on tumors by Quénu, Paris, 1890, I, 445, and other similar works.

[91] Sur une tumeur osseuse généralisée à laquelle conviendrait le nom de tumeur à ostéoblasts, Leon Bouveret, Thèse de Paris, 1878.

[92] Med. Rec., 1877, (12), 524.

[93] Ziegler, General Pathology, English Translation of the 10th German Edition, N. Y., 1903, p. 430.

[94] Beiträge z. path. Histologie, Berlin, 1858, 100.

mation of an intercellular substance by the cells of sarcomas, a substance which he referred to as bone-cartilage in which the lime salts were later deposited, in a manner which would have proven quite helpful to students of the histogenesis of bone,[95] had they but applied it to normal conditions of development. Indeed there is but little in the most recent accounts dealing with the morphology of normal osteogenesis which Billroth failed to recognize in the production of bone in tumors save changes in designations and some of the results of elaborations of technical methods. His bone-cartilage corresponds to the "*substance fondamentale*" of other writers, and to the delicate intercellular network I have described in the alveoli resembling fibrin so remarkably. As has already been remarked, this intercellular substance attains a certain maximum width and the heavier frameworks are formed by their closer approximation. In spite of repeated assertions[96] that lamellated bone is not formed in osteo-sarcomas, the distinction, it must be admitted, is largely one of degree and of a difference in arrangement. This disposition of the secondary growths of bone sarcomas to reproduce in such marvellous detail at times cartilage, at other times cancellous bone with marrow which it is claimed may possess depots of erythrocyte formation,[97] is highly important since one of the chief objections to a parasitic origin for tumors has always existed in this tendency of malignant tumors to form tissue at a distant point with some semblance to that from which the primary tumor grew.

The symptoms caused by the growth in the lungs and pleuræ of these metastatic tumors have frequently, as in the case of C. P., been ascribed to tuberculosis,[98] indeed this mode of death has been so commonly reported, and even after the removal of an osteo-sarcoma, that it has interfered greatly in the accumulation of statistics of the results of operation. Reinhardt[99] refers to the difficulties of distinguishing the two affections, and Kramer[100] to the likelihood of the "*Brustwassersucht*," reported as the cause of death in one instance 4¼ years after operation being in reality due to secondary growths. Many reports concern death from pleurisy, some from pneumonia. In the chapter devoted to aneurysms of bone Bell[101] mentions a museum specimen in St. Bartholomews Hospital, from a patient in whom during life pulsation in the aneurysm was very evident, but who "died from pleurisy before any operation could be performed for her relief": also of a specimen in his possession of an aneurysm of the humerus removed by his father from a woman 60 years of age who "suffered no return of the complaint, but died two years afterwards from a sudden attack of pleuritis." There is little doubt that the pleuritis referred to in these patients was in reality a bloody effusion due to pleural growths, the secondary tumors of the central myeloid sarcomas formerly considered as bone aneurysms being prone, as already has been pointed out, to produce similar bloody and even cyst-like growths within the lungs. The dyspnœa suffered by the patients with secondary intrathoracic growths has been emphasized by many observers; death from orthopnœa has been reported in some instances. The hæmoptysis frequently leads to a persistent search for tubercle bacilli.[102] On the other hand in comparison with the space in the thorax which the tumors may occupy, the symptoms, as already has been stated, are relatively few. The considerable periods between the removal of the primary growths and the development of symptoms due to the intrathoracic tumors make the simulation of tuberculosis a very important matter. A period of four years is regarded by many surgeons as the minimum *post operationem* interval which must elapse before cure may be regarded as likely and this estimate has reference to distant metastases as well as local recurrences. That still longer periods represent a still larger margin of safety is illustrated by the death reported by Waterhouse[103] from the tumors in the lungs secondary to an osteo-sarcoma of the humerus removed eight years before.

[95] For an account of the controversies concerning the development of bone, see Retterer, J. de l'Anat., 1905, (41), 561.

[96] Ribbert, Geschwülstlehre, Bonn, 1904, 207 and Menetrier, Le Cancer, in the Traité de Médecine et de Thérapeutique by Brouardel, Gilbert and Thoinet, 1908, XIII, 399.

[97] Müller, l. c., p. 413, referred to the firm diploë in secondary bony tumors of the lung; see also Borst, Die Lehre von den Geschwülsten, Wiesbaden, 1902, I, 440.

[98] Boyer states that that a patient from whom Morigi removed an osteo-sarcoma of the knee (which together with the recurrent growth were studied by Scarpa) subsequently died of tuberculosis, Traité des Maladies Chirurgicales, Paris, 1822, II, 521.

[99] L. c.

[100] L. c.

[101] A Treatise on Diseases of Bones, London, 1828, 156.

[102] See the report by Dowling, l. c.

[103] Lancet, 1900, (2), 1203.

ARMY MEDICAL CORPS EXAMINATIONS

AT WASHINGTON, CHICAGO AND SAN FRANCISCO.

The Surgeon-General of the Army announces that the War Department has appointed permanent boards for the preliminary examination of applicants for appointment in the Medical Corps of the Army to meet at Washington, D. C., Fort Sheridan (near Chicago), Illinois, and San Francisco, California, in addition to the usual preliminary examination boards that are assembled at various Army posts throughout the United States from time to time. The permanent boards will hold sessions on the second Monday of each month.

A limited number of successful candidates will be appointed first lieutenants in the Medical Reserve Corps (salary $2000 per annum), and assigned to Army posts until the next session of the Army Medical School, when they will be ordered to attend the school as "student candidates."

Applicants must be citizens of the United States, between 22 and 30 years of age, graduates of reputable medical schools, of good moral character and habits, and shall have had a year's hospital training after graduation, or its equivalent.

Full information concerning the examination can be procured upon application to the Surgeon-General, U. S. Army, Washington, D. C.

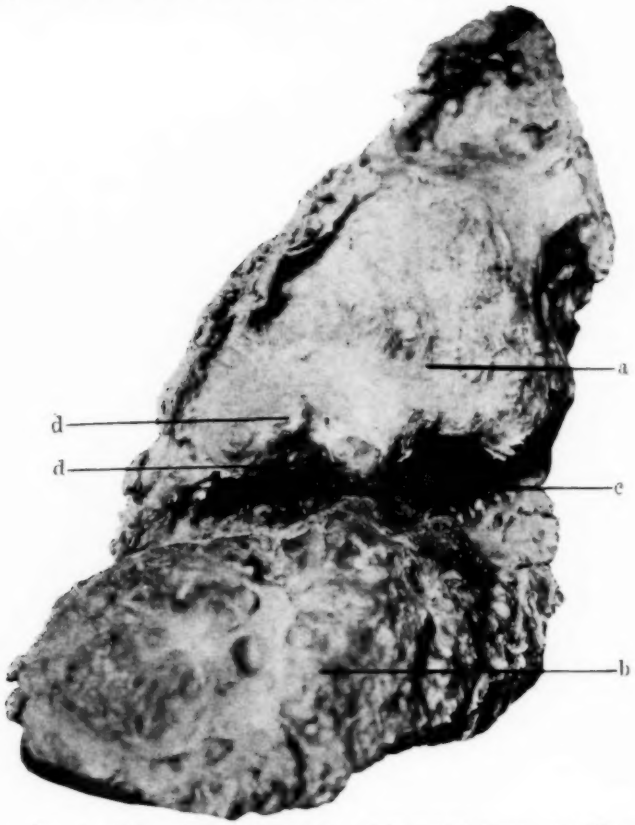

FIG. 1.—The external appearance of the right lung. (*a*) The right lung. (*b*) The diaphragm. (*c*) The space between the two into which the hand can be inserted edgewise. (*d*) Bosses on the lower margin of the right lower lobe.

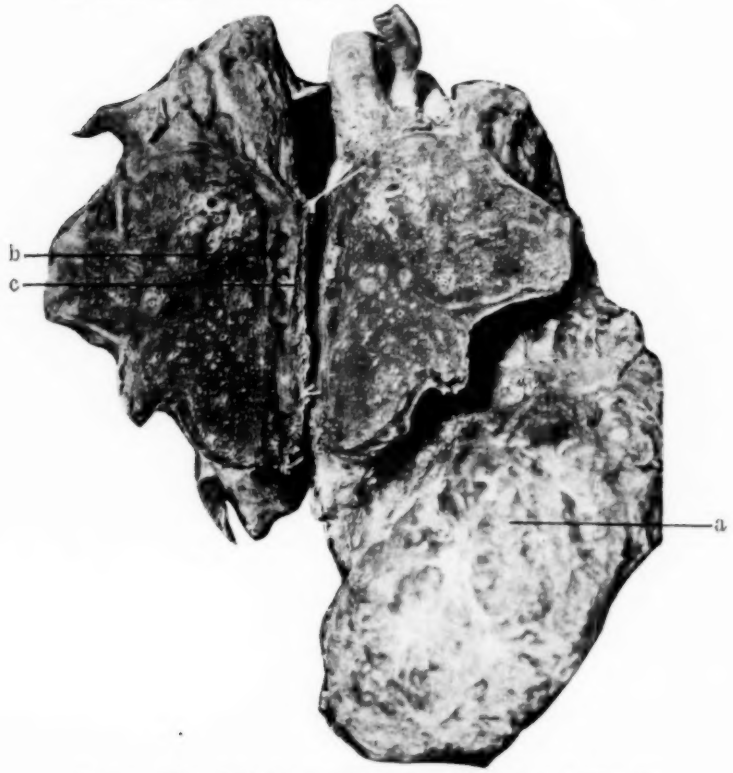

FIG. 2.—The right lung sectioned sagittally. (*a*) The diaphragm. (*b*) The inner table. (*c*) The outer table of the calvarium-like sheet of bone on the posterior border of the lung.

FIG. 3.—Primary tumor in the tibia, front view.

FIG. 4.—Surfaces exposed by sectioning the primary tumor sagittally.

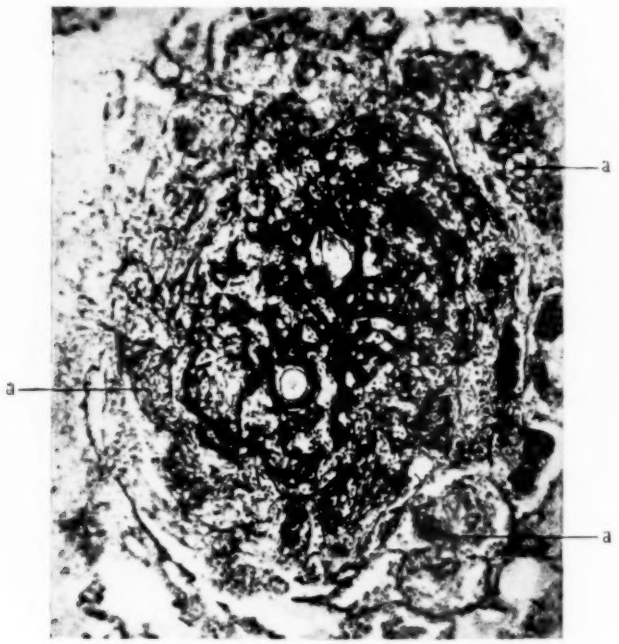

FIG. 5.—Section through a minute metastatic growth almost 1 mm. in diameter; the heavy meshwork with Haversian-like canals containing blood vessels in the center. (*a*) Early intra-alveolar formation of delicate network of bone.

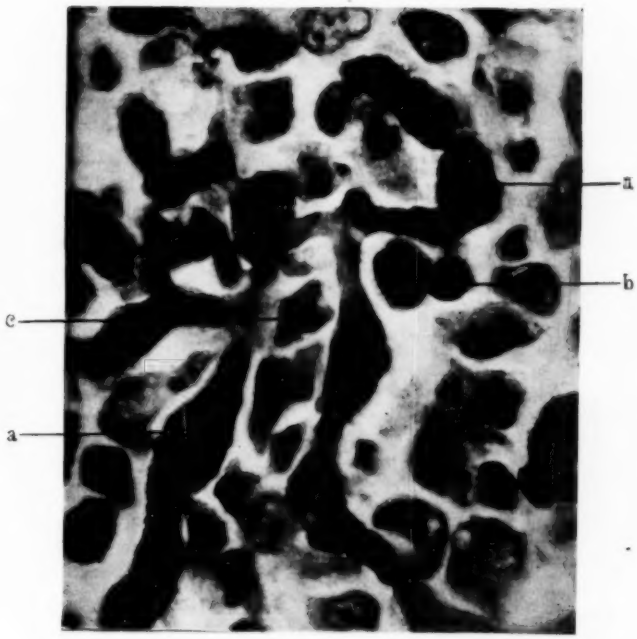

FIG. 7.—The bone-forming cells and the intercellular framework. (*a*) Framework sectioned lengthwise. (*b*) Framework sectioned across showing that a pillar or column formation occurs. (*c*) Mitotic nucleus.

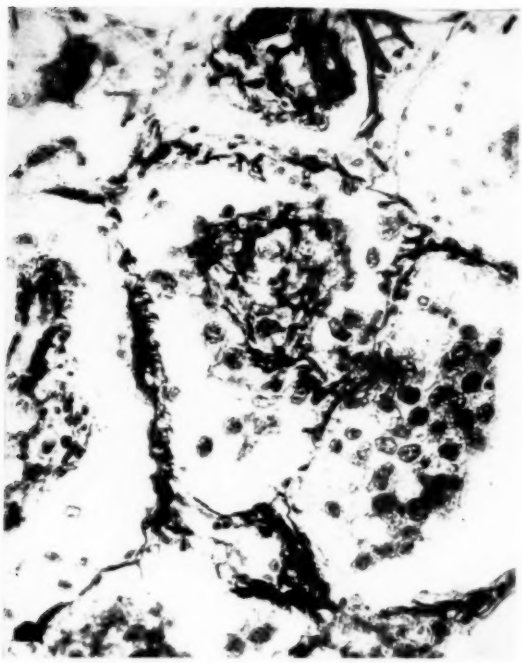

FIG. 6.—Fibrin-like minute mesh of bone centrally located among bone-making cells in an alveolus on the periphery of such a nodule as shown in Fig. 5.

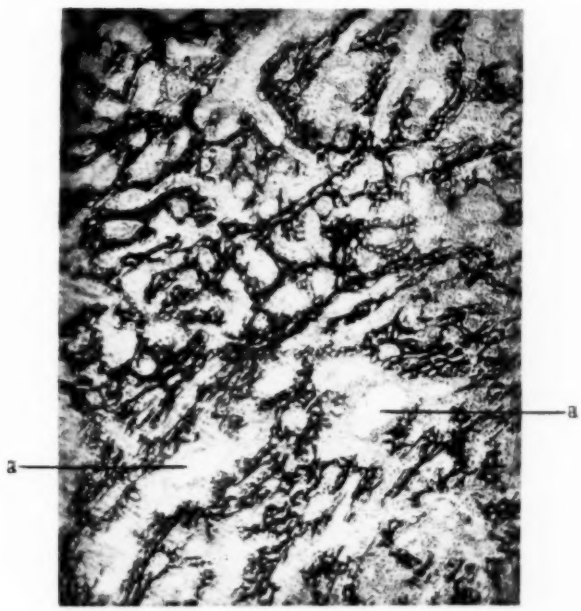

FIG. 8.—A network of bone in which the thin partitions are in a measure massed together to form heavier strands which enclose large blood vessels and marrow cavities. (*a*) Large veins in marrow cavities.

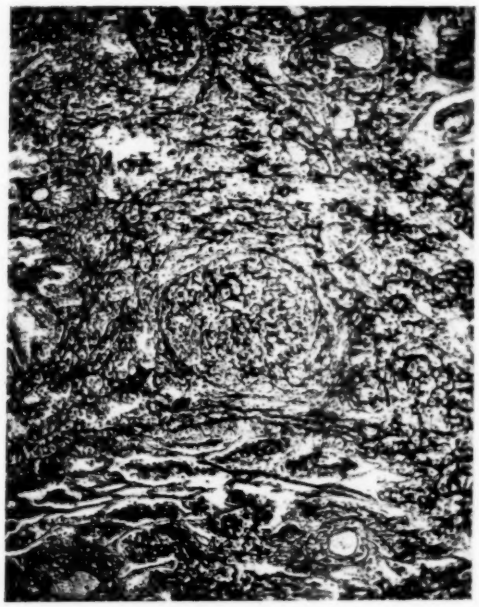

FIG. 9.—Delicate meshwork of bone, the spaces containing one, two or only a few bone-making cells.

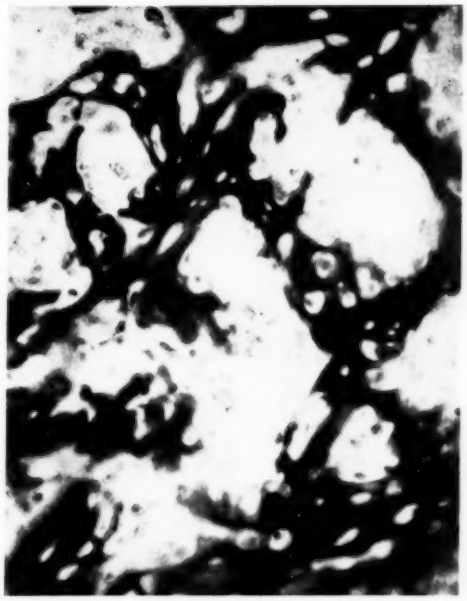

FIG. 10.—A portion of the structure shown in Fig. 7 which illustrates the affinity of the edges of the first (primary) layers of bone formed, the layers which are analogous to the lamellæ of normal bone, for basic dyes.

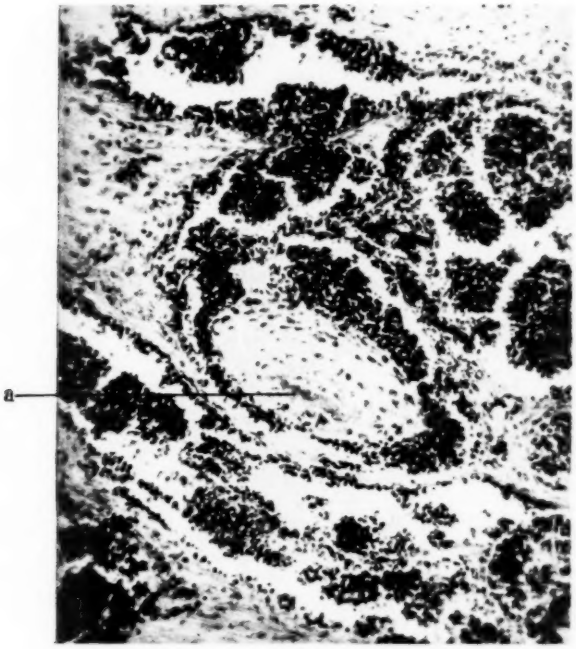

FIG. 11.—Minute nodule of bone in a lymph gland. (*a*) Early bony meshwork surrounded by bone-making tumor cells.

ARETAEUS THE CAPPADOCIAN.[1]

By EUGENE FAUNTLEROY CORDELL, M. D.,
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Of Aretaeus, personally, we have no direct knowledge, further than that conveyed by the title. This indicates that he was a native, or at least a citizen, of Cappadocia, a mountainous country in the eastern part of Asia Minor bordering on the Euphrates. It is considered probable that he lived in the second century of the Christian era, about the time of Galen, and it has been conjectured that he studied at the great seat of learning in Alexandria. Johannes Wigan[2] thinks he must have resided in Italy because he recommends the Italian wines, the Falernian, Fundan, Signine and Surrentine, all of which are mentioned in the works of Horace, Pliny, Martial and other Roman writers.

But little light is thrown upon the subject by his writings. He does not mention any of his supposed contemporaries, as Galen, for instance; indeed he seldom refers to individuals. The Iliad is quoted some twelve times and there are some eighteen allusions to the works of Hippocrates, chiefly the Aphorisms. We read also of the antidotes of Philo, Symphon, Vestinus and Mithridates, and these names give us some hints as to the age of our author. Philo lived at Tarsus. He is referred to by Celsus and Galen, by the former as the inventor of an eye-salve. The Philonium, or Antidotum Philonianum, is mentioned by Quintus Serenus Sammonicus, a physician, about A. D. 216, and by Marcellus Empiricus, also a physician, about A. D. 400. The Mithridatium took its name from Mithridates, King of Pontus—century before Christ; it consisted of 54 ingredients. According to Wigan,[3] in the "Compound Medicine of Vipers," reference is made to a preparation of a certain Andromachus, of Crete, the physician of Nero. This, theriaca, as it was called, because first intended for the bite of serpents, although later employed against all kinds of diseases, indiscriminately, consisted of 61 ingredients. I can find no references to Symphon or Vestinus.

Aretaeus cites the plague of Athens in relation to the supposed poisoning of the wells in the Piraeus by the Peloponnesians, remarking that this erroneous idea was natural in view of the resemblance between the effects of such substances and those of pestilential diseases.

In correspondence with his reverence for the ancient writers, it is to be noted that Aretaeus used the Ionic dialect—that of Homer, Herodotus and Hippocrates. This fact, however, is no argument against the date assigned to him, as Lucian, Arrian and others of the second and third centuries, sometimes do the same.[4] That he was a surgeon of skill and experience, we may infer from his work on that subject—unfortunately lost—and his references to operations, as this: "I once made an opening into an abscess in the colon on the right side near the liver and much pus poured out, and much also passed for several days by the kidneys and bladder, and the man recovered."[5]

The titles of the works of Aretaeus were: I, On the Causes and Symptoms of Acute and Chronic Diseases; II, On the Therapeutics of the Same; III, Fevers; IV, Surgery; V, Prophylaxis; VI, Diseases of Women; VII, Pharmacy. Only the first and second of these are now extant, in eight books and in a very mutilated condition, whole chapters being lost; thus we find 22 entire chapters missing, besides many parts of others.

It is a singular fact that a writer of such unquestionable merit as Aretaeus should have been almost entirely ignored by ancient writers. As he does not refer to Galen, so Galen does not refer to him; and this circumstance, together with a decided correspondence between their literary and professional views, Adams considers to be a proof that they were contemporaries. Alexander of Aphrodisias, third century A. D., Aetius, about A. D. 550, Paul of Aegina, about 100 years later, and the author of the Euporista, a work of unknown origin, are the only ancient authorities that quote him by name. He is wholly ignored by the Latin and Arabian writers. A possible explanation of this, as suggested by Adams, may be found in the numerous compilations which were made at an early period, in which his writings and views may have been merged. The first modern edition of Aretaeus was the Latin translation of Junius Paulus Crassus, a professor at Pavia, and was printed at Venice in quarto, in the year 1552. Two years later this was followed with a first Greek edition at Paris by Jacobus Goupylus. Numerous editions have since appeared, among the more recent being one in Greek and English by Francis Adams, published by the Sydenham Society in 1856, a work like everything from Adams' pen, of great erudition and merit, and which the modern reader will find it most convenient to consult.

Let us now examine the views of our author, and first those upon anatomy and physiology.

The constituents of the body are found in the condition of humor, spirit (pneuma) and solid, and upon the proper composition and relations of these life and health depend. As in Hippocrates, there are four humors—blood, phlegm, white bile and black bile. The blood is formed from the food in the liver. The phlegm is secreted by the brain and descends upon the different organs through the cribriform plate of the ethmoid. White bile is manufactured in the liver, black bile in the spleen. The vapors, a variety of humor, also proceed from the spleen.

[1] Read before the Johns Hopkins Hospital Historical Club, March 8, 1909.

[2] Aretaeus Cappadox, Oxoniæ, 1723, fol.

[3] *Op. cit.* Also Galen, De Theriac ad Pison., et de Antidot.

[4] Wigan, *op. cit.*; Sprengel, Gesch. der Arzneyk., Halle, 1823, II, 60; Robert Fuchs, Handb. der Gesch. der Med., Neuburger u. Pagel, Jena, 1902, I, 366; Francis Adams, Extant Works of Aretaeus, Lond., 1856 (Syd. Soc. Ed.).

[5] Adams, *op. cit.*, I, 9.

The heart is the seat of the soul and of animal heat; the source of respiration and of life. "What other organ is more important," he asks, "for life and for death?" It draws in spirit (pneuma) by the lungs, which are subordinate to it. The aorta arises from the heart, and in the chest lies on the left of the vena cava, with which it sympathizes. By it the spirit is carried outwardly while the veins convey the blood to all parts for their nutrition.[6]

The liver is the source of the veins; indeed it is for the most part a mere concretion of blood. Its function is to produce blood and bile. All the food is brought by the vena portæ from the stomach and intestine to the liver, whence it is carried by the vena cava as blood to the heart. According to certain of the philosophers, the soul has its seat in the portæ of the liver, but Aretaeus does not sanction this view. He, however, quotes Homer to the effect that bile and anger are synonymous terms, an idea very prevalent through all antiquity. Inflammation of the liver produces jaundice, white jaundice, due to the obstruction of the bile ducts and absorption. He knows of the portal circulation, the ramifications of the vena portæ in the liver and the rise of the hepatic veins carrying the new-formed blood to the vena cava, being clearly described.

The lungs are of loose texture resembling wool. They are by nature devoid of sensation and hence there is no pain in pneumonia unless the membrane covering them is involved in the inflammation. The kidneys are true glands, but are whiter than the ordinary glands—more like the liver. They resemble the testes, but are curved and broader. They contain small cavities like sieves for the percolation of the urine, which are connected with the bladder on either side by canals. There are short and broad veins leading from the liver to the kidneys, by which the matters passing out from the former are evacuated. These veins are straight and give to the kidneys the appearance of being suspended near the liver (he refers evidently to the renal veins which empty into the vena cava opposite the liver). Jaundice may arise from affections of the kidneys as also of the stomach, spleen and colon.

The stomach presides over pleasure and disgust, by promoting good digestion and good spirits in health and their opposites in disease. A part of the digestion goes on in the colon, which is a thick and fleshy part of the intestine.

The spleen is the strainer of the black blood and the jaundice from it is dark green. It is porous and insensible; often becomes greatly enlarged (scirrhus), though seldom suppurating, and is especially subject to disease in marshy localities.

The womb is described thus: "In the middle of the flanks of women lies the womb, a female viscus, closely resembling an animal, for it is moved of itself hither and thither in the flanks, also upwards in a direct line to below the cartilage of the thorax; and also obliquely to the right or the left either to the liver or spleen; and it likewise is subject to prolapses downwards, and in a word, is altogether erratic. It delights also in fragrant smells, and advances towards them; and it has an aversion to fetid smells, and flees from them; and, on the whole, the womb is like an animal within an animal."[7] Hence, it may be suddenly carried upwards, compressing the lungs, heart, diaphragm, liver, intestines, obstructing the breathing and speech, and compressing the carotids and causing stupor.[8]

The brain is the seat of sensation and the source of origin of the nerves. It also secretes phlegm.

The blood he calls the nutriment of the body—"the food of all parts, the heat of all parts and the color of all parts." And hence, although it is also "the food of inflammation," and we must remove it in that condition, he inculcates the importance of husbanding it as much as possible.

In the enumeration of diseases, we meet with names familiar, as apoplexy, epilepsy, tetanus, pleurisy, pneumonia, hysteria, satyriasis, gonorrhœa, diabetes, icterus, asthma, cholera, phthisis, dropsy, arthritis, dysentery. There are also many unusual or mysterious terms, as phrenitis, lethargy, marasmus, cynanche, causus, ileus, kephalæa, skotoma, pneumodes.

It is important to remember that these names do not always mean what we understand them to mean; some indicate symptoms, some embrace several distinct diseases. The cause of phrenitis is seated in the head or senses. Heart disease is considered under the title, syncope or cardiacs. Affections of the viscera are placed in groups—those "about the liver," those "about the kidney," etc. A very curious term for a disease is elephas or elephantiasis, so named from a supposed resemblance to the animal. It is also called satyriasis, leo, morbus herculeus, terms indicative of its magnitude and severity. The account of it begins with a description of the animal. Adams believes it was syphilis, which (under the names lichen or mentagra) was prevalent at Rome in the first and second centuries A. D., and of which descriptions are given in Pliny, Martial and Marcellus Empiricus. It was attributed by these Roman writers to the fashionable practice of salutation by kissing. The whole description conveys the impress of exaggeration which is so foreign to Aretaeus, and Sprengel charges him with having yielded here to the temptation to indulge in style and fine writing.[9]

The causes of disease are various. Cold acts generally, especially in affections of the air-passages, and is assisted by moisture and draughts. It is one of the causes assigned for tetanus.

[6] The spirits are not elaborated in Aretaeus to the same extent as in the system of Galen, according to which the blood takes up the "natural" spirits in the liver, is laden with "vital" spirits when it reaches the left ventricle and on reaching the brain generates "animal" spirits, which circulate thence by the hollow nerves and subserve the higher functions of the body. (See Foster, Hist. of Physiol., 1901.) Aretaeus speaks only of the spirit (pneuma) which is taken in with the breath.

[7] Adams, *op. cit.*, p. 285.

[8] In passing, I feel compelled to remark that this description of the uterus by Aretaeus is incomprehensible, being at total variance with his general clearheadedness and common sense. I shall only remark that it was the prevalent opinion on the subject and that it continued such for many centuries.

[9] Adams, *op. cit.*, p. 370.

Climate is a factor—that of Egypt produces throat diseases. Season is concerned. Cachexia causes anasarca and phthisis. Food faulty in quality and quantity leads to angina, apoplexy, dropsy, dysentery, ileus, inflammation of the liver. Wine in excess causes angina, apoplexy, inflammation of the liver, paralysis, madness. Medicines may be concerned: cantharides may cause inflammation of the bladder; buprestis (melœ vesicatoria), dropsy; mandragora and hyoscyamus, furor, etc. Instruments may be to blame: the catheter may cause injury and even sphacelus of the bladder. Injuries are often operative: a wound may cause tetanus; blows, falls, etc., apoplexy, abscess of lungs; heat, fishbones, blows, angina or quinsy. Many diseases arise from others, as suppression of urine from a calculus; phthisis from cough, pneumonia, ulcer and hemorrhage of the lungs; dropsy from disease of the liver and spleen, asthma and gout; empyema from pleurisy and pneumonia; disease of the liver from dysentery; tetanus and prolapsus uteri from abortion; paralysis from gonorrhœa; asthma from gout, etc. Suppressed discharges and secretions are often productive of disease. A redundancy of vapors causes disinclination to exertion, weight in the head, noises, flashes of light, etc.

In connection with this mention of the "vapors" by Aretaeus, the following *morceau* may be of interest:

The King is subject to vapors—vapors which proceed from the spleen and the melancholic humor whose livery they wear, in the chagrin they impart and the desire for solitude which they engender. They permeate by the arteries to the heart and to the lungs, where they excite palpitations, disquietudes, lassitudes and dyspnœa; from thence proceeding upwards they even reach the brain, and there by disturbing the spirits of the optic nerves, they set up vertigo and swimming of the head, and colliding elsewhere with the nervous principle, cause weakness of the limbs to such a degree that support is necessary in walking, a circumstance very troublesome to anyone, but more particularly the King, who has need of all the head he has in the discharge of the affairs of state. His temperament tending much to melancholy, his sedentary mode of life, his presiding much in councils, his natural voracity, which causes him to eat too much, greatly promote this malady, by reason of the excessive and inveterate obstructions the crudities excite in the veins, which, retaining the melancholic humor, prevent its escaping by the natural passages; and so by their retention give rise to heat, fermentation and tempestuousness; thus there is no reason for surprise that bloodletting so powerfully awakens the disorder, seeing that it is so certain that by the movement it excites in the entire volume of the blood and throughout the veins, it agitates the melancholic humor in its very sources, and without evacuating it aggravates its ebullition and evaporation.—*Journal de la Santé du Roi* (a daily record of the health of Louis XIV, kept by his physicians of the Paris faculty by his order for 64 years, 1647-1711). Molière and his Medical Associations, by A. M. Brown, M. D., London, 1897.

Aretaeus' fame rests largely upon his pictures of disease. None of the ancients can compare with him in his power to portray disease. We lose much of the effect, of course, in translation, especially in literal translation. His powers of description are best seen in such affections as tetanus, epilepsy, hysteria.

"Tetanus is an exceedingly painful spasmodic affection, following a wound, blow, abortion or exposure to cold, and proving quickly fatal. It begins in the muscles and tendons about the jaws, extending thence to the whole frame. The convulsions bend the body backwards so that the head is lodged between the shoulder-blades (opisthotonos), or forwards (emprosthotonos), or extend it out straight. In all cases the jaws are locked so firmly that they can only with difficulty be prized apart. If the teeth be forcibly separated and liquid be then poured into the mouth, it is not swallowed, owing to the contraction of the fauces, but is squirted out or held in the mouth, or regurgitates through the nostrils. The face is congested and variously distorted, the eyes are fixed or rolled about, the cheeks and lips are tremulous, there is grinding of the teeth, the jaw quivers, there is subsultus of muscles and there is a painful sensation of suffocation. The urine is retained or passed involuntarily."

"The paroxysm of epilepsy is preceded by circular flashes of purple or black, or it may be of all the colors of the rainbow, or by peculiar sounds, or by a bad smell, or by manifestations of irritability or anger, or by a feeling of dread, as of an attack by a wild beast. This is followed by contractions, first involving the thumbs and great toes, and rapidly extending to the head, when the patient falls suddenly as if struck with a piece of wood or with a stone, and indeed this impression of having been maliciously struck down may remain after recovery, especially in first attacks.

"When the affection has become habitual, patients realize from the seizure of a finger or other part that a convulsion is coming on and call upon those present to bind or stretch such part. By such means the attack may be postponed for a time. With the fall the patient becomes unconscious, the hands are clenched,[10] the limbs are stiff or are dashed hither and thither, the head is drawn forward so that the chin rests on the chest, or backward, or to one or other shoulder. The lips are compressed or drawn wide apart, or stretched sideways over the teeth as in smiling. The tongue protrudes from the mouth, incurring the risk of being badly bitten, the eyeballs are rolled inwards, the eyelids for the most part wide apart showing the white and quivering, the cheeks are congested, the eyebrows frowning. Soon the countenance becomes livid and swollen, the vessels of the neck are distended, the patient moans and makes guttural noises as if he were being throttled, foam issues from the mouth, and there is erection of the genitalia. As the attack draws to a close there are unconscious discharges of urine, semen and fæces, and the patient lies pale, torpid, heavy and exhausted. At length he rises up, the paroxysm being ended."

"In hysteria the woman experiences a choking with loss of breathing and speech like that which occurs in epilepsy. There is insensibility and deep stupor. The attack may come on suddenly with a fall. The limbs are seized with jerkings, both voluntarily and involuntarily. During the unconsciousness the patient lies as if dead, except that her eyes are bright and not entirely fixed and her color is more ruddy than usual."

[10] Not "clasped" as Adams has it.

He notes the rusty sputa and the crisis on the seventh day in pneumonia, the optimism of consumptives, the vicarious hemorrhage in menstruation. Pain in the shoulder in affections of the liver is noted and ascribed to dragging on the pleura.

The differences between arterial and venous hemorrhage are well described.

The symptoms of phthisis are enumerated as follows: chronic cough, spitting of blood and pus, hectic fever, colliquative sweats, loss of strength and flesh, pallor, loss of appetite, hoarseness, fingers bony, with thickened joints and curved nails, nose slender and sharp, cheeks red with cheek bones prominent, eyes brilliant and hollow, lips drawn over teeth as if smiling, muscles of arms imperceptible, not a vestige of the mammæ—the nipples only being visible, the ribs showing through the skin, the throat prominent and chest narrow, the joints and bones devoid of flesh, the shoulder blades projecting like the wings of birds, a tendency to looseness of bowels, the whole aspect cadaverous.

The divergence of the tongue in facial paralysis is noted, and caution is inculcated not to mistake the affected for the unaffected parts: "in laughter, speaking or winking, the true state of matters becomes manifest, for the parts affected are all drawn aside with a smack; the lip expresses no smile and is motionless in talking, the eyelid is immovable, the eye fixed, and the sense of touch is lost, while the sound parts speak, wink, feel, laugh."

One of the most interesting features is the evidence that he practiced physical diagnosis just as we do now, by inspection, palpation, percussion and auscultation.

We see inspection in his observation of the character of the respiration, of the posture, decubitus, etc., of the color, heat and swelling of the surface, the condition of the veins, the tongue, the pulse, the nails, the sputa, etc. We find this *passim* and it is only what we would expect from so careful and acute an observer.

He likewise resorts to palpation, as in enlargement of the liver, "the boundaries of which are distinctly circumscribed, for the hand applied in pressure, after passing beyond the circumference of the liver, sinks down into an empty space in the abdomen." He notes also "pain on pressure below the false ribs." He observes the tendency to painless swelling of the spleen, which sometimes extends clear over to the right side, and is as hard and unyielding as stone, causing many observers to be deceived into the belief that it is an affection of the peritoneum. Sometimes the organ floats in the abdomen and can be moved about from side to side. Rarely it suppurates, when it becomes soft and yielding to the touch. He notes a relationship of these cases of enlarged spleen to marshy localities, bad water and the autumnal season of the year. In ascites by strong compression over the lower belly, the fluid can be made to change its position. In the same condition pressure with the finger leaves an indentation which continues for a considerable time.

The following are examples of percussion: "In tympanites, the abdomen, when tapped, or percussed sounds like a drum." Nor does the flatus shift its place with changes of posture, not even if the part be completely inverted; this is not the case if fluid be present.

After all this, one searches with eagerness to find if there be any mention of the *rhogmoi* or râles described by Hippocrates in diseases of the chest—pneumonia, phthisis, empyema, etc.—and alluded to by Caelius Aurelianus (fifth century A. D. ?) De Morb. Acut. II, 10: "Gutturis Stridor quem Graeci *rhogmon* vocant." They are also mentioned by Paul of Aegina, seventh century, under pneumonia and the operation of laryngotomy, and by the Arabian Rhazes, ninth century, and Psellus, eleventh century. We find the term used by Aretaeus in describing the symptoms of asthma, a name which evidently embraced other affections giving rise to dyspnœa, besides that to which we limit it. "Succussion," or the sound elicited by shaking the body, upon which Hippocrates laid such stress in "empyema," a term which simply meant with him pus in the chest, is not mentioned. On the other hand, in enumerating the symptoms of heart disease, we find among them *"a bruit of the heart."* The Greek word is *πάταγος*—"*πάταγος τῆς καρδίης.*"[11] This word is used several times by Homer: *πάταγος ὀδόντων*, chattering of the teeth; *πάταγος ὀζῶν*, crashing of branches against each other in a wood during a storm; *ἐν δ' ἔπεσον μεγάλῳ πατάγῳ*, they fell into the water with a great splashing noise. It is also used by others for the rattling of the wind, for the sounds made by animals and musical instruments, etc. Akin to *πάταγος* are *παταγέω*, *ποτάσσω*, *παταγή*, which are employed to express the clapping of hands, the beating of the heart and even thunder.

It is a fact of the highest interest that Aretaeus recognized the murmur of heart disease. And in connection with it we should note that he does not speak of it as an uncommon or striking symptom, one which he had heard on some rare occasion, in some peculiar case. Had this been so, we may rest assured that so careful and conscientious an observer would have so stated. But he includes it among the common symptoms, such as palpitation, vertigo, fainting, pulse failure, etc. And in the same way we may assure ourselves that the murmur of which he speaks was elicited by the application of the ear to the chest. We know that such murmurs are sometimes heard at a distance from the patient, but this is altogether exceptional. Laennec noticed it in several cases, but only at a distance of a few inches. A medical friend heard a loud, humming sound, as he sat by the bedside of a patient, like that of a sewing machine in the adjoining house; he found that it proceeded from an aortic lesion. That such cases are extremely rare I am convinced from a personal experience of over 40 years in hospital, dispensary and private practice, in which I have always given special attention to the heart. The memory is very fallible, yet it is strange that not a single such instance remains impressed upon mine, nor do I find any mention of it in several of our most popular text-books, which surprised me very much, for of course I know there had been

[11] Adams, *op. cit.*, pp. 30, 271.

such cases. Nor is it strange that so acute a diagnostician as Aretaeus should extend to the heart the method which had enabled him to elicit the *rhogmoi* in affections of the lungs, and with which he was made so familiar by the well-studied writings of his revered predecessor—Hippocrates—the gospel of the medical profession of his day. It is a fact, however, that Aretaeus is the only one of the ancient writers, so far as I know, who auscultated the heart.[12]

The therapeutics of Aretaeus are copious and varied, offering a striking contrast to Hippocrates who has comparatively little to say on medical treatment. In the classification of his remedies we find acids, alkalis, stomachics, antidotes, calefacients, refrigerants, emetics, purgatives, astringents, stimulants, diuretics, nervines, etc., and locally venesection, leeches, cups, clysters, friction, massage, sternutatories, gargles, cataplasms, fomentations, epithems, blisters, ointments, baths, arteriotomy, the catheter, the cautery, irritants, hemostatics, etc. Some of his individual remedies are: absinth or wormwood, a stomachic; dates, an astringent; Samian and other earths, galls and starch, coagulants; wine, a stimulant (not to be used in inflammations); castor and asafœtida, nervines; cantharides used in making blisters; spiders' web, a hemostatic, used in checking hemorrhage from leech bites, etc.; mustard, an irritant; hiera of aloes, and hellebore, purgatives—white hellebore expelling yellow bile and black hellebore, black bile. He uses various sorts of baths, hot, cold, sea, sand, sulphurous, etc., and recommends various forms of exercise, active and passive, chironomy, walking, leaping, riding, sailing, vociferation, massage, throwing the *halteres*, etc.

In the treatment of disease, venesection fills a very prominent rôle. There is hardly a disease in which it is not recommended. Believing the "blood is the pabulum of inflammation," which is a very frequent condition, it is quite natural to attempt to check disease by removing it. Aretaeus is always cautioning, however, against its too free loss. The quantity to be drawn is to be regulated by the strength. It is difficult to determine the amount and mistakes are easily made. If you take too much you dispatch your patient, "for blood imparts vital heat to the body and to the food." It is better to err on the side of smallness, for if you have not drawn enough, you can open a vein again. In some cases venesection is urgently called for as in pleurisy and pneumonia. In the latter blood should be taken from both arms at once, so that revulsion of the humors may take place from both sides of the lungs; but we must not carry it to *deliquium animi*, for that co-operates with the "suffocation." For if the exciting causes be from the blood the venesection removes them, but if from phlegm or froth or any other of the humors, the evacuation of the veins widens the area of the lungs for the passage of the breath. In affections of the heart we must take much less than in any other case, for here even a slight mistake will send a patient to Hades. The greater the disease the more imperative does the great remedy—*μέγα βοήθημα, μέγα ἄκος*—as he calls it, become. This applies to those affections which involve the brain—apoplexy, kephalæa, epilepsy. Epilepsy was especially subjected to heroic measures. "Whatever is great and most powerful is needed for epilepsy. Blood is to be taken from the veins at the elbow, the straight vein at the forehead, and by cupping, but still not to the extent of *deliquium animi*, for that has a tendency to induce the disease. The arteries before and behind the ears are to be opened or portions of them excised, and purgings, which are still more potent measures, are to be produced by medicines which draw off phlegm from the head." The medicine should be particularly powerful, for the habits of such persons renders them tolerant of pains and their goodness of spirits and good hopes render them strong in endurance. Blistering the head with cantharides and even trephining the skull are recommended. He enunciates the same doctrine under the disease elephas (elephantiasis): "the remedies ought to be greater than the disease in order to procure relief."[14] I believe ileus is the only

[12] Hippocrates called any collection of pus within the chest empyema. Abscesses of the lung were not infrequent, according to him. Their discharge gave rise to vomicæ or cavities. This discharge might occur in either of two directions: 1, into the bronchi, followed by expectoration; or 2, into the pleural cavity. The former he considered a fortunate issue. Hippocrates does not say, as has been affirmed, that succussion is a constant symptom of pus in the chest. We know that it does not occur in simple collections of water or pus in the pleura. It is, however, common in pneumo-hydro and pneumo-pyothorax and according to Laennec may be heard in large cavities half filled with fluid. Hippocrates noticed that it was absent where pus was retained (true empyema), for he says: "Those who are full of pus yield no sound." This seems to point to his success in its practice as being due to the fact that he applied it in conditions where air was present. Yet he does not appear to have been aware of the condition pneumothorax (Laennec). It is interesting to note that between 1819 and 1826—about 6½ years—Laennec found the symptom succussion in 30 cases and also knew of many other cases in the hospitals of Paris. Hippocrates describes succussion as follows: "Having placed the patient in a firm seat, cause his hands to be held by an assistant and then shake him by the shoulder in order to hear on which side the disease shall yield a sound." *De Morbis*, II, 45. That Hippocrates did actually apply his ear to the chest is clearly stated, for in the treatise *de Morbis*, II, 59, in speaking of diagnosticating collections of fluid within the chest, he uses these words: *Πολλόν χρόνον προσέχων τό οὖς πρός τά πλεῦμα.* This passage seems to have entirely escaped the observation of his successors. Even Laennec had read these words without heeding them. May not the great discovery of the latter have been due more to the words of the great father of medicine still echoing through the chambers of his brain, "applying the ear to the chest," rather than to the happy accident or inspiration to which he ascribes it? In evacuating fluid when it protrudes between the ribs, Hippocrates says the incision should be made low down, "at the point where the râle is heard"—*ὅκῃ ἂν ψοφέῃ*.[13] Hippocrates is said also to have practiced percussion; I am not able as yet to verify this statement.

[13] De Morbis, Lib. II, Sec. 5 (Foes Edition, Vol. I, p. 483).

[14] "Well, in my opinion, did Aretaeus, the Cappadocian, say that the power of remedies ought to be greater than those of diseases; and that for this reason elephantiasis is incurable, because it is impossible to find a medicine more powerful than it. For if cancer, which is, as it were, an elephantiasis in a particular part, is ranked among the incurable diseases by Hippocrates himself, how much more is not elephantiasis incurable, which is, as it were, a cancer of the whole body."—*Paulus Aegineta (Adams), II, 1.*

disease in which bleeding *ad deliquium animi* is recommended by Aretaeus.

Cupping is often to be preferred to venesection, having the advantage of not reducing the strength. Both dry and wet methods were used, the former acting by revulsion of matters from within. In protracted apoplexy blood should be abstracted unsparingly from the back of the neck. The benefit from cups was especially marked in pleurisy.

Unusual forms of venesection were those from the lingual veins—the tongue being pressed upwards against the roof of the mouth—in obstinate cases of inflammation of the throat, which, if the blood flows freely and copiously, proves more effectual than all other means; from the nostrils in head affections by means of a long instrument called *καταιάδιον* or by a *τηρίνη* (a sort of scoop), which is thrust into them, or if these be wanting, by a goose quill, made rough at the end like the teeth of a saw, which is pushed down to the ethmoid cells and the veins there roughly scratched or scarified; and from the veins of the forehead, pubes, ankle and back of the hand.

Next to venesection and cupping came purgatives, among which the most powerful were elaterium, the hiera of aloes, and hellebore. The last named was a sort of *dernier resort;* if all other remedies failed in chronic diseases, the white hellebore was the only cure. In first attacks of gout it was "the great remedy."

Clysters were used to evacuate the bowel and to produce revulsion of humors from the head, chest, etc., in affections of those parts. There were two sorts of clysters—as mentioned under quinsy—one, the common clyster, to bring away feculent matter; the other to produce revulsion of the humors.

I will now give some details of treatment of individual diseases.

Dropsy is relieved by hydragogue purgatives, sweating and diuresis. Tetanus is treated by asafœtida. Soothing fomentations are applied in pleurisy. In spitting of blood he recommends ligatures to the arms and legs by broad bands firmly applied, which appears to indicate that he understood the direction of the blood-flow in the veins.[15]

In heart disease, "the patient must be stouthearted and courageous, and the physician must encourage him with words to be of good cheer and assist with diversified food and drink. . . . . Let him lie in cool air and in a house having a northern exposure, and if the cool breeze of Boreas breathe upon him" [he is here quoting from Homer, where he speaks of wounded Sarpedon][16] "'it will refresh his soul sadly gasping for breath.' The prospect should be towards meadows, fountains and babbling streams, for the sweet exhalations from them, and the delightful view will warm the soul and refresh nature. And, moreover, it is an incentive to eat and drink. But if, from want, one is not fortunate enough to possess these things, we must make an imitation of the cool breeze, by fanning with the branches of fragrant boughs, and if the season be spring, by strewing the ground with such leaves and flowers as are at hand." And then he enumerates other measures to be employed and concludes: "By these means the patient is to be brought back to convalescence and his accustomed habits."

In phrenitis, sleep is to be secured by the application of poppy fomentations and by stroking the temples and head.

He treats phthisis by life at sea, "for the sea-water contributes something desiccant to the ulcers," by riding, by anointing with oil, by milk, whose praises he sounds in strong language, and by raw eggs.

In epilepsy he considers diet very important. No flesh is to be allowed. Castor is the best remedy. He has never tried the brain of a vulture, the heart of a raw cormorant, and the weasel, alleged remedies. He has seen persons holding cups beneath the wound of a man recently slaughtered and drinking thence draughts of human blood. "O the mighty necessity," he exclaims, "which compels one to practice such a wicked abomination. And whether even then they recovered, no one could tell me for certain. There is another story of the liver of a man being eaten. However, I leave these things to those who care to try them."

There are few allusions to surgical operations, but enough to make us realize how much we miss by the loss of his work on that subject. He refers to this treatise in connection with some remarks on abscess of the liver and its treatment. He recommends urethrotomy for stone impacted in the neck of the bladder. In suffocative quinsy, which is evidently laryngeal diphtheria, he is opposed to tracheotomy, "for the heat of the inflammation is increased by the wound, and thus contributes to the suffocation and cough; and, moreover, should the patient be so fortunate as to escape, the lips of the wound will not coalesce, being cartilaginous and of a nature unfavorable to union."

Some of his sentences are epigrammatic, recalling the terseness and force of the aphorisms of Hippocrates: "It is impossible to make all the sick well, for the physician would in that case be superior to the gods; but the physician can secure respite from pain and intervals in disease, and can render diseases latent." "Few escape from dropsy, and they more by fortune and the gods than by art; for all the greater ills the gods only can remedy." "For the strength of nature produces health, but her weakness disease." "This is a mighty wonder, that, in hemorrhage from the lungs, which is particularly dangerous, patients do not despair, even when near their end. The insensibility of the lungs to pain appears to me to be the cause of this; for pain even when slight makes one fear death. In most cases pain is more dreadful than pernicious, whereas the absence of it, even in serious illness, is unaccom-

[15] It is one of the strangest things in all medical history that for centuries physicians were bandaging the arm in practicing venesection and yet never realized the direction of the blood current in the veins. Even Harvey's teacher, the Paduan anatomist, Fabricius ab Aquapendente, although he wrote a work on The Valves of the Veins, believed that the blood flowed from the heart to the extremity, although it distends the veins on the *distal* side of the bandage. In his opinion the valves were designed to delay the blood and prevent the whole of it flowing at once to the hands or feet and becoming collected there. See Foster, *op. cit.*

[16] Il. V, 697.

panied by fear of death and is more dangerous than dreadful." "One must be fertile in expedients and not be satisfied to apply his mind entirely to the writings of others." "Experience is a good teacher, and one ought to try experiments, for too much caution results in ignorance." "If you give a medicine at the height of the dyspnœa" [he is writing of pneumonia], "or when death is at hand, you may be blamed for the patient's death by the vulgar." "To those who suffer such pains" (in ileus), "to die is happiness, yet it is not permitted to the reputable physician to impart it. However, at times, it is permitted to lull the patient asleep with narcotics and anæsthetics, when he foresees that there is no escape from the evil." "When these things are done, if the disease does not yield, the patient's condition is hopeless." "If he vomit up everything" (in cholera), "if the sweat be excessive, if he become cold and livid, if his pulse be almost imperceptible and his strength be exhausted, it will be well to try to make one's escape with credit." I could give many such passages.

His regard for the patient's comfort is shown in the following, which also conveys an important practical therapeutic hint: "Inunctions are more agreeable and efficacious than fomentations; for an ointment does not run down and stain the bed clothes—a thing very disagreeable to the patient—but it adheres, and being melted by the heat of the body, is absorbed. Thus its effects are persistent, whereas liquid preparations run off."

SUMMARY OF RESULTS OBTAINED, AND FEATURES OF INTEREST, IN TWO HUNDRED AND FIFTEEN CONSECUTIVE CATARACT EXTRACTIONS.[1]

By SAMUEL THEOBALD, M. D.,

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Of the cases included in this summary 100 have been reported in detail heretofore.[2] Like this first series, the 115 eyes since operated upon were in no sense "selected cases." Indeed, five of the cataracts were of traumatic origin, and three of these were complicated by the lodgment of a foreign body within the eye, and one by laceration of the iris, while in one case pulmonary tuberculosis was present, in another diabetes, in another an iridectomy had been done previously for inflammatory glaucoma, and in still another the cataract was hypermature and partially dislocated.

I have felt warranted in excluding six cases from this report, as their inclusion would have marred its statistical value. In three of these there was before operation no light perception, the lens being removed in one to reduce tension, in one for cosmetic effect, and in one to lessen the irritability of the eye blind from irido-choroiditis. In another case there was doubtful light perception, consequent upon an old choroidoretinitis, and though recovery from the operation was smooth vision was not improved. In another the cataract was secondary to extensive detachment of the retina, and in still another, which was of traumatic origin, due to penetrating wound of the ball, the eye was eventually enucleated because of severe and persistent iritis.

Combined extraction, which I regard as the most satisfactory method, was done in 94 cases, extraction after preliminary iridectomy in 17 cases, simple extraction (unintentional) in 1 case, extraction in capsule, without iridectomy (unintentional), in 2 cases, and suction extraction in 1 case of traumatic cataract.

In most of the cases in which a preliminary iridectomy was done the cataract was immature, and trituration of the lens was combined with it; in one instance the iridectomy was done for the control of glaucoma. In two of the preliminary iridectomy cases, owing to complications, the lens was extracted with the "loop."

In all of the operations the section was made throughout in the sclero-corneal juncture, and in nearly all of them a small conjunctival flap was secured. A small iridectomy was made with a single cut with the scissors, the writer's reverse-curved iris scissors (Fig. 1) having been used with much satisfaction for this purpose. The lens capsule was opened

FIG. 1.—Reverse-curve Iridectomy Scissors (about one-half actual size).

freely—a long vertical cut being crossed by a shorter horizontal one. After extrusion of the lens the iris was carefully disentangled from the angles of the section by means of the spatula. Both eyes were closed with sterile pads of gauze and cotton, the eye operated upon being further protected by a Murdoch's shield, the dressing over the other eye being held in place by strips of adhesive plaster. The fellow eye was kept closed until the fourth day; the pad was not removed permanently from the eye operated upon until the seventh day. Strict antisepsis was practised, the instruments and all solutions used being sterilized by boiling, and the hands

[1] A paper read before the American Ophthalmological Society, New London, Conn., July 14, 1909.

[2] Americal Journal of Ophthalmology, Vol. XVI, p. 353.

of the operator and his assistant cleansed by scrubbing and immersion in sublimate solution. Beginning on the second day after the operation, sometimes not until the third day, a daily application of a sterile 4-grain solution of atropine was made to the eye operated upon.

Accidents and Complications.—In the 115 cases not heretofore reported loss of vitreous humor occurred nine times. In five instances this was due to strong contractions of the lids, four occurring in negroes. In one case there was difficulty in delivering the lens, in one the loop was used, and in two cases the cause was not apparent. In the first hundred cases vitreous was lost six times.

In one case, after a smooth operation, the patient, in taking a dose of trional, had a spell of choking and coughing, which brought on a severe intra-ocular hemorrhage. Hernia of the vitreous humor followed, and, though suppuration was avoided, the result was a failure—only light perception being retained.

In endeavoring to secure a small coloboma, it happened in several cases that the pupillary margin of the iris was not excised, a "button-hole" iridectomy being the result. In no instance did this seem to interfere with the success of the operation. Several times, too, the iris protuding in front of the knife was cut during the completion of the corneal section; but, while this made an ideal iridectomy difficult or impossible, it was in no case followed by serious consequences. In one instance, in which it was difficult to seize the iris, due probably to exceptionally wide mydriasis from the cocaine, the iridectomy was done after delivery of the lens. It so happened that the best visual result of the series was obtained in this case. There were 15 cases in which discission of capsular opacity was performed, and in one of these a second discission was necessary. There were a number of cases of mild iritis, and three cases in which the iritis was so severe as to require a secondary iridectomy, the ultimate visual result in these cases being $\frac{20}{C}$, $\frac{20}{CXXV}$ and $\frac{20}{CC}$ respectively.

SUMMARY OF RESULTS.

Successes $\left(V=\frac{20}{CC}\text{ to }\frac{20}{XV}\right)$	95
Successes (V not recorded)[3]	8
Total successes	103
Partial successes $\left(V=\frac{6}{CC}\text{ to }\frac{18}{CC}\right)$	6
Partial successes (V not recorded)	1
Failures from suppuration	2
Failures from other causes	3
	115

The visual acuity obtained in the successful cases, omitting the eight cases in which it was not recorded, and taking the best vision in each, whether before or after discission of capsular opacity, was as follows:

$\frac{20}{XV}$	1
$\frac{20}{XX}$	2
$\frac{20}{XXV}$	3
$\frac{20}{XXX}$	15
$\frac{20}{XL}$	18
$\frac{20}{XLV}$	3
$\frac{20}{L}$	8
$\frac{20}{LX}$	1
$\frac{20}{LXX}$	5
$\frac{20}{LXXV}$	2
$\frac{20}{LXXX}$	4
$\frac{20}{XC}$	6
$\frac{20}{C}$	14
$\frac{20}{CXX}$	3
$\frac{20}{CXXV}$	2
$\frac{20}{CL}$	1
$\frac{20}{CC}$	7
Total	95

Of the cases designated in the above summary as "partial successes," the poor vision obtained was due in one to the patient (a negro) contracting the lids so strongly just before delivery of the lens as to cause a loss of about one-fourth of the vitreous humor $\left(V=\frac{10}{CC}\right)$; in one (also a negro) through similar behavior forcing out the lens and a considerable quantity of vitreous $\left(V=\frac{10}{CC}\right)$; in one, in which there was a smooth recovery, to antecedent choroidoretinitis $\left(V=\frac{6}{CC}\right)$; in one to antecedent syphilitic iridochoroiditis $\left(V=\frac{16}{CC}\right)$; in one to an old uveitis, for which I had previously performed an iridectomy (V unrecorded), and in one case, in which $V=\frac{18}{CC}$ was obtained, the cataract was caused by a blow from a whip, and was complicated by laceration of the iris.

Of the five "failures" two, as indicated, were due to infection, with resulting purulent panophthalmitis. One of these occurred in a woman 80 years of age, in feeble health, an inmate of the Home for Incurables. The operation was performed at the Baltimore Eye, Ear and Throat Hospital, and the usual antiseptic precautions were observed. The conjunctiva tore under the grasp of the fixation forceps, and for this reason the corneal section was made with difficulty, and was somewhat smaller than was intended. Counter-pressure was required to effect the delivery of the lens, and when it rather suddenly slipped out there was a small loss of vitreous. A crater-like depression of the cornea followed, and this had not entirely disappeared when the permanent dressings were applied, after a delay of a quarter of an hour. More than the usual amount of pain followed the operation, and on the third day it was evident an infection had occurred. The eye was subsequently enucleated.

The other infection happened in a man about 74 years of age, in poor health, and of unsound mind. The cataract was fully mature and was very black, and, it seemed not improbable, was secondary to disease of the deeper eye-tunics. I had operated upon the other eye four years before (No. 68

[3] The history notes of these cases showed smooth recoveries, but for various reasons, chiefly because the patients did not report for adjustment of glasses, no record of vision was obtained.

of previously published series), and this eye (otherwise diseased) was also lost by infection. It is worthy of note, therefore, that this one individual furnished just half of the four infections which occurred in the whole series of 215 operations.

Because of this previous experience, I had, as a precaution, performed a preliminary iridectomy upon the second eye. The nucleus proved to be exceptionally large, and for this reason, though a good corneal section had been made, its delivery was a little difficult. However, no vitreous was lost, and the outlook seemed altogether promising. After the operation the patient complained continuously of pain, and three times tore off the dressings, twice during the second night. Within 48 hours a purulent panophthalmitis set in and the eye, of course, was lost.

Of the three "failures" due to causes other than pyogenic infection, one, resulting from post-operative hemorrhage, has already been described.

Another occurred in a man 86 years of age, who was in fairly good health. A broad arcus senilis was present, and the iris was very light in color. Adrenalin (1:1000) was used in conjunction with the usual 4 per cent cocaine solution. The cornea collapsed after completion of the section, and it was impossible to see the light-colored iris. Probably, owing to exceptionally wide mydriasis, it was equally impossible to seize the iris; so, after several ineffectual efforts to accomplish this, the capsule was opened and the lens delivered without the performance of an iridectomy. Collapse of the cornea followed, but the edges of the section being in good apposition the dressings were applied. The cocaine was not used oftener nor for a longer time in this case than usual, and it seemed altogether probable that the unfavorable conditions produced were due to the added effect of the adrenalin. At all events, I have never since ventured to use it in operating for cataract.

Undue inflammation, suggestive of non-pyogenic infection, followed, and involved the anterior portion of the vitreous body as well as the iris. During convalescence the patient fell and fractured the neck of his femur. On this account he was removed to a general hospital, where I saw him some weeks later. He was then able to see the hand by reflected light, and there seemed to be a chance of improving vision by a secondary operation. He was not, however, heard from again.

The third case of failure from causes other than pyogenic infection was to me of especial interest: A negro woman, who gave her age as 56, but was probably older, had a somewhat hypermature cataract in the right eye, and a not fully mature cataract in the left eye. A smooth operation (combined extraction) was done upon the right eye. The result was entirely satisfactory, except that there was some entanglement of the iris in one extremity of the corneal section, and within five weeks she had in this eye $V = \frac{20}{XXX}$. She was anxious to have the other cataract removed before leaving the hospital, and, contrary to my usual practice, I operated upon the left eye three weeks after the date of the first extraction. The operation was smooth, and when the eye was inspected on the second day its condition was most promising, there being very little cortex in the pupillary area. Some days later the right eye became injected, and then the left eye began to do badly, and before long a severe and obstinate iridocyclitis was established in each eye. Extensive adhesion of the iris to the vitreous body occurred in both eyes, the T of each fell below normal, and in each V was reduced to light perception, with no hope of improvement.

That a condition closely akin to sympathetic ophthalmitis was established in this case seems altogether probable, and I feel sure that two successful operations were spoiled because so brief an interval was allowed to elapse between their performance.

Several other cases presented features worthy of mention: A negro, 60 years of age, a truck driver, with a hypermature cataract in one eye, eight days before reporting saw well enough with the other eye to drive his team. Within this brief period, and without signs of inflammation or the occurrence of any traumatism, the lens of the seeing eye clouded so rapidly that V was reduced to light perception, and the cataract, though presenting a mother-of-pearl appearance, was recorded as "nearly mature." I may add that I have encountered three other similar cases.

Mrs S., a gentlewoman, 65 years old, after a successful combined extraction upon one eye, the other eye having slight peripheral lens opacity, with a low grade of compound hypermetropic astigmatism and nearly normal vision, wore for several years with entire satisfaction bifocal glasses, which gave her comfortable binocular vision in both far and near. Such an experience, so far as my observation goes, is rare, and it is, perhaps, worth while to give the formula of her lenses:

Right eye +11.s, with +3.75s added for near.

Left eye +.62s +.37c 85°, with +3.50s added for near.

With these the V of the right eye was $\frac{20}{XX}$; of the left eye $\frac{20}{XXV}$ (?), and of the two eyes $\frac{20}{XX}$, missing one letter.

Mrs. H., about 70 years of age, had had a successful extraction operation performed upon the left eye. A combined extraction was done upon the right eye, with good result; but when an attempt was made to adjust glasses to the two eyes intolerable vertical diplopia resulted, and it was found that a downward squint had developed in the right eye during the time that it was not in use. To overcome this diplopia a 5° prism, base up, before the right eye was necessary, and this effect was obtained by decentering the lens. The point of interest is that in a little more than six weeks the hyperphoria had almost entirely disappeared, and the patient was actually more comfortable without the prismatic correction which so short a while before was urgently demanded.

In the 100 extractions heretofore reported there were, as has been indicated, two eyes lost from suppuration, giving a total of four for the whole series of 215 cases—slightly less than 2 per cent. There were, also, two eyes in which V was

not improved, though recovery from the operation was smooth, the negative result in one being due to pre-existent extensive retinal detachment; in the other to an old syphilitic iridochoroiditis. There were six partial successes and 90 successes.

Combining the results of the two series we have:

GENERAL SUMMARY.

Successes (V $\frac{20}{CC}$ to $\frac{20}{XIII}$)	178
Successes (V not recorded)	15
Total successes	193
Partial successes (V $\frac{6}{CC}$ to $\frac{18}{CC}$)	10
Partial successes (V not recorded)	3
V not improved, though recovery from operation was smooth	2
Failures from suppuration	4
Failures from other causes	3
Total operations	215

The seven failures recorded represent a loss of slightly more than 3.25 per cent.

The visual acuity obtained in the successful cases, omitting the 15 cases in which it was not recorded, was as follows:

$\frac{20}{XIII}$	1	$\frac{20}{LXXV}$	6
$\frac{20}{XV}$	1	$\frac{20}{LXXX}$	7
$\frac{20}{XX}$	4	$\frac{20}{XC}$	6
$\frac{20}{XXV}$	3	$\frac{20}{C}$	22
$\frac{20}{XXX}$	31	$\frac{20}{CXX}$	7
$\frac{20}{XL}$	25	$\frac{20}{CXXV}$	2
$\frac{20}{XLV}$	3	$\frac{20}{CL}$	1
$\frac{20}{L}$	19	$\frac{20}{CC}$	14
$\frac{20}{LX}$	10		
$\frac{20}{LXX}$	16	Total	178

CORRESPONDENCE.

NEW YORK, October 19, 1909.

To the Editors, Bulletin of the Johns Hopkins Hospital.

GENTLEMEN: If the Review of my book, "The Surgery of the Ear," which appeared in the October number of the JOHNS HOPKINS BULLETIN only contained the opinions of the Reviewer on the material of the book, then I would perforce be obliged to accept his opinions without further comment. But, as on the one hand, the Reviewer charges me with inaccuracy in my anatomical notes, and on the other hand, mis-states my arguments, giving your readers an incorrect impression of my views, therefore, I ask indulgence and space to place my answer before your readers.

In the matter of anatomy, my use of the term "aditus ad antrum," rather than the term "attic" or "recessus epitympanicus," finds confirmation as to its correctness of usage by some of the best anatomists, and Siebenmann on page 276 of Bardeleben's Handbuch der Anatomie des Menschens: Sinnesorgane, Abteilung II, gives the reasons why the use of any other term than that of "aditus" is incorrect from the anatomic, the embryonic, clinic and even the pathologic side. V. Troeltsch, Eysell, Schwartze and others have used the term as I have done. Besides, I placed the words "attic" and "epitympanic space" in parentheses, next to the term "aditus."

Regarding the relative angle of the membrana tympani to the axis of the external auditory canal, your Reviewer does not read me correctly. I do not give the angle of the membrana tympani to the axis of the external auditory canal. I give the angle formed by the inclination of the drum head to that of the superficies meatus or squamosa. Furthermore, the angle referred to by the Reviewer is still a mooted question. The right is certainly mine to believe the findings of Henle, v. Troeltsch, Gruber, Merkel, Tillaux, and also Schwalbe. I was not, and I am not unaware of the more recent work on this point by Poirier, but after studying the question myself, and reading Siebenmann's investigation of ten skulls at birth, I hold the newer view as not yet proven, and certainly am entitled to place the more generally accepted view in my book without being charged with inaccuracy.

In the matter of mis-statements by the Reviewer, I beg to refer to his quotation, that I advance the argument of "sudden and transient mania" against early ligation of the internal jugular vein in cases of sinus thrombosis. On page 232 of my book, under a caption *Untoward Sequalæ*, I report among other unusual happenings after resection of the jugular "sudden and transient mania," quoting from a report among others, of Dr. John D. Richards. I remark at the end of the paragraph, that I had seen sudden and transient mania follow operations on the mastoid where *no* operative work was done on the blood vessels, giving the best I could find in the literature reporting such cases. I am at a loss to understand how this could be construed into the meaning the Reviewer uses as my arguments.

Finally, in regard to the reasons that the Reviewer assigns to me for my failure to get good results from the use of the blood clot after-treatment, I beg to refer to page 97 of my book where I distinctly state my reasons for the failures. Again, the inspection of the skin wound, by removal of the outside dressings is hardly meddlesome surgery. It is a procedure performed regularly at our hospitals, after primary suture of the skin after radical mastoid surgery, and has never given harmful effects. The reasons why I do not curette the mastoid antrum in the infant and young child are given on page 109. The Reviewer has taken a sentence from this page and placed it in juxtaposition to another from under the caption *Blood Clot After-treatment* and leaves the reader of his article under the impression that I was discussing one and the same subject. Here again, like the other mis-statement of my views there is an injustice to my opinions as distinctly given in the book, since I certainly neither believe nor advocate meddlesome surgery, nor do I advocate neglect to properly cleanse the antrum. If I do not curette the antrum in the infant and young child, I give my reasons for my procedure, and surely an author has a right to express his opinions in his book.

Respectfully,

S. J. KOPETZKY.

BALTIMORE, October 25, 1909.

To the Editors of the Johns Hopkins Bulletin.

GENTLEMEN: In answer to Dr. Kopetzky's letter, I beg leave to mention only the following points:

First, his explanation of the use of the term "aditus" does not answer my criticism; I objected to his use of the words aditus

and attic as synonymous, whereas they refer to different portions of the midde ear space.

Secondly, regarding the angle of the tympanic membrane, I have no objection to his adherence to the old view thereof but I think the most recent anatomical work tends to show that he is in error.

Thirdly, as to post-operative mania being an argument against ligation of the internal jugular vein, perhaps I attributed a greater importance to that portion of his argument than the author intended; on re-reading the paragraph referred to I find that the statement is not as emphatic as I at first considered it.

Fourthly, as to the question of dressing the mastoid wounds and the effort to secure primary healing, I adhere to my previous statement. On page 109 the author describes his treatment of the antrum, as I referred to it, and my next quotation *does* follow in logical sequence for, the remainder of page 109 and pages 110 and 111 are devoted to the technique of operation and the findings within the diseased area, pages 112 and 113 to the after-treatment when dressed in the ordinary way and page 114 to the after-treatment when the blood-clot dressing is applied; if considering the blood-clot treatment of mastoidectomies upon children, pages 109 and 114 must be read together. That the advice contained therein, to investigate the blood-clot dressing daily, is of a meddlesome nature is shown, I think, by the author's own advice regarding the treatment of the packed wound; on page 112 it is advised not to change the dressings, unless compelled to by untoward symptoms, earlier than the fifth day and on that and the following page it is explained that early or frequent dressings afford the possibility of infecting a clean wound. If that advice is correct for this class of cases it is doubly important to emphasize it when striving for primary union.

Very truly yours,

H. O. R.

NOTES ON NEW BOOKS.

Aseptic Surgery. By CHARLES BARRETT LOCKWOOD, F. R. C. S. Third edition. Price $1.50. (*London: Henry Frowde and Hodder & Stoughton.*) *Oxford Medical Publications.*

This work, which was published first but a short time ago, has met with deserved success. It is an excellent clear exposition of the principles underlying asepsis, good both for nurses and younger medical students. Though the English practice does not correspond closely to the American in many details, yet the principles are the same, so that the book can be read with as much advantage in this country as abroad. But no book will teach students how to practice asepsis thoroughly; this can only be learned satisfactorily in the operating rooms.

Children in Health and Disease. A Study of Child Life. By DAVID FORSYTH, M. D., D. Sc., Physician to the Evelina Hospital for Sick Children. Price $3.00. (*Philadelphia: P. Blakiston's Son & Co., 1909.*)

This volume attempts to deal with childhood, both in health and disease, from a scientific standpoint. The author presents his facts clearly and does not content himself with giving dogmatic statements in reference to baby feeding, the conditions of infant life and the examination of sick children merely, but presents other admirable chapters upon the anti-natal and post-natal physiology of children, the psychology of infants and children, the hygiene of schools and school life and the medical aspects of the latter, the medical inspection and supervision of school children, the training of children and the education of defective children. While all of the volume is admirable, the chapter on the training of children is especially to be commended to all who have to do with children. The author believes that the training of children should be to assure their bodily health and to shape and form their characters no less. The first step in their moral training should be the inculcation of implicit obedience to constituted authority until the primitive canons of conduct become ingrained and crystalize into thought and action. Later, when a sense of right and wrong has become habitual and an appeal can be made to the child's sense of honor, habits of independence and self-reliance may be inculcated. The author says: "Not until health and character exist as sufficiently sure foundations on which to build up intellectual training should we give prominent attention to those subjects, a knowledge of which will serve to fit the child for a working place in the world. The trained mind is not the one which has absorbed the greatest amount of information, but the one that has found the exact use of its own contributory senses and sound judgments. To attain this end a long pupilage is necessary and it must be planned on natural lines that will call into play all the channels of sensory information and the responsive muscular actions. As an important item in this training we must supplement the experiences of the young mind with observations made by others—that is to say, by the study of books. The environment of the child will thereby be widened to an extent which is possible by no other means. At first the mental training should not concern itself with the probable adult occupation of the child, but should be devoted only to imparting that knowledge which is of general applicability and is necessary to every one. Later on somewhat more special bias may be given to the instruction, but not until the general training has been completed should the future occupation of the child be allowed to cast its shadow on his educational course. The author criticizes severely the undue prominence which is given to the acquisition of facts in the modern scheme of education, facts such as the "heights of mountains, historical dates, populations, lists of proper names, exports and exceptions to sales," which produces a disproportionate hypertrophy of the memory. He believes that the prize-winners and gold-medalists have not attained the greatest successes in life and that the qualities which are most serviceable in the examination-room are not of the highest value in after life. He divides the educational period of children into three stages: first, that of spontaneous education, in sight and touch, accurate muscular movement and motor training, etc.; second, that of disciplinary training in school and at home, with a maximum of nature study and a relatively small amount of book-work; and third, the period of adolescence when conscience can be appealed to, discipline can be relaxed and the reasoning faculties can be developed. This chapter is worthy the careful study of all parents and teachers, giving as it does rational views as to education and presenting an aspect of child-training which is wholly neglected by the majority of those who have to do with children.

The chapters on the special care of sick children are also very valuable, but space will not permit a detailed reference to them.

Higher Frequency Currents. By FREDERICK FINCH STRONG, M. D., Instructor in Electro-Therapeutics at Tufts College Medical School, Boston. Price $3.00. (*New York: Rebman Company, 1908.*)

The author of this treatise has been engaged for the past ten years in the clinical and laboratory study of the various types of high frequency currents. This volume is the result of his studies and observations. The first chapter is entirely historical and gives one an excellent résumé of the subject from the time when electricity was first used in medicine to the present time.

The author then goes on to describe exhaustively the physics of

high frequency currents and the various methods for the production of such currents. The remainder of the book is devoted to the application of these currents and the therapeutic effects produced. The author, in writing of the remarkable curative effects, explains them upon the assumption that "We have in these currents a rough counterfeit or substitute for the peculiar nutritive flux transmitted through the nerves to all tissues of the body to which we give the name 'trophic influence.' It is this trophic power which enables the cells to absorb their quota of nutriment from the blood, to maintain their vital resistance and to perform their various functions." In another place the author writes: "The vitalizing and invigorating effects of high frequency treatment are necessarily beneficial in all diseased conditions."

From these quotations we are not surprised to find that the author extends the application of high frequency currents not only to disorders of the nervous system, but also to diseases of the digestive, circulatory, respiratory, excretory systems and even to diseases of an infectious and malignant character.

Progressive Medicine. Vol. II, June, 1909. (*Philadelphia and New York: Lea & Febiger.*)

Clark, Coley, Foote, Jackson and Stengel, respectively, contribute chapters on 1, Gynæcology; 2, Hernia; 3, Surgery of the Abdomen, exclusive of Hernia; 4, Ophthalmology; and 5, Diseases of the Blood, Diathetic and Metabolic Diseases, Diseases of the Spleen, Thyroid Gland and Lymphatic System. All the chapters appear to be brought well up to date, and the discussion of the literature is excellent.

International Clinics. Vol. II. Nineteenth Series, 1909. (*Philadelphia and London: J. B. Lippincott Company.*)

Dr. Peter Daniel, of London, has written a long and valuable article on Congenital Idiopathic Dilatation of the Colon, which is splendidly illustrated with some X-ray photographs, for this volume. It will interest not only surgeons, but general practitioners, for these cases are usually seen first by the latter. Another paper well worthy of attention is Dr. Shoemaker's, of Philadelphia, on "Immunization Against Typhoid Fever," a subject that has not received as much study as it deserves in this country. To those who know the "Clinics" it is unnecessary to point out their merits, and for others it is only needful to note their broad scope and general excellence. Twenty authors, English, French and American, are represented here by twenty different papers on Treatment, Medicine, Surgery, Psychiatry, Pathology, etc., so it is seen that the articles range widely and appeal to various tastes.

The Open-Air Treatment of Pulmonary Tuberculosis. By F. M. Burton-Fanning, M. D., F. R. C. P., London Physician to the Norfolk and Norwich Hospital. Second edition. Price $1.50. (*New York: Paul B. Hoeber, Publisher, 1909.*)

This modest volume of less than two hundred pages furnishes an excellent guide to the treatment of tuberculosis and deserves a wide circulation among general practitioners. The author is conservative as to the advantage of the Calmette and von Pirquet tests and does not think that these tests should be relied upon wholly in attempting to diagnosticate early tuberculosis, but that every bit of available evidence should be used in clearing up a diagnosis.

He recommends complete rest in bed as long as the patient shows any increase in body temperature above 99° F. at any time of the day. He also recommends confinement to bed as a preliminary measure of treatment in all cases. He has sensible ideas about acclimatizing patients to open-air life and would accustom the patient to such a life gradually. He is not wholly certain wherein the advantages of open-air life consist. There is undoubtedly a higher bacterial content in all confined air and hence a greater degree of freedom of respiration in the open air. He further considers that the motion of the air exercises a beneficial influence on health as is suggested by the exhilaration felt from passing rapidly through the air and during the prevalence of certain winds. He has no doubt of the beneficial action of the open air in the treatment of consumptive fever. He goes so far as to recommend that when in consumptives the fever does not subside under partial open-air treatment to push the open-air treatment to the extent of having the patient out of doors continually.

He speaks upon the whole favorably of Wright's method of obtaining the opsonic index with a view to immunization and seems to prefer the method to the use of tuberculin. This does not correspond with the experience of hospitals in the United States.

The chapter on diet is unusually full and satisfactory. The book as a whole is sensible and judicious and can be recommended heartily.

Tuberculosis. A Preventable and Curable Disease. By S. Adolphus Knopf, M. D. (*New York: Moffat, Yard & Co., 1909.*)

For many years Doctor Knopf has distinguished himself by the zeal and enthusiasm he has displayed in the propagation and popularization of our knowledge about tuberculosis. Every one has come to admire the ready and genial spirit with which he has answered the numerous exacting demands made upon his time and energy. The present book is in the manner of his popular talks with which all are familiar. It covers a large field, and for the most part satisfactorily. Its plan is a broad one, executed clearly and with spirit. It appeals to a varied audience and there is no one who will read it without acquiring much valuable information. The innumerable side channels of the tuberculosis problem are all explored and indeed these form the most interesting part of the work. The remarks on proper housing, on the duties of the municipality and on the safeguarding of the health of children are especially apt. It is difficult to name any of the even less important contributing factors in the development of tuberculosis that are not mentioned. The matter can be easily understood by laymen and is entertainingly and agreeably presented. The cause of tuberculosis will be greatly furthered if Knopf's book gains the popularity its importance and interest deserve.

The Malarial Fevers, Hæmoglobinuric Fever and the Blood Protozoa of Man. By Charles F. Craig, M. D., Captain Medical Corps, U. S. Army. Illustrated. Price $4.50. (*New York: William Wood & Co., 1909.*)

No one desiring to make a thorough study of these diseases will be able to do without this work, which is the first exhaustive book on the subject in the English language, and an excellent one. Dr. Craig is to be complimented on having written a work which will long stand as an authority. He has had more experience than anyone else in this country with these diseases, and now presents to the profession a long-wanted treatise. It is thorough, well compiled and written and quite up to date. It is to be hoped that it will be widely read and studied, for with its aid fewer mistakes in the diagnosis between malaria, typhoid fever, pneumonia and other diseases will be made. The author is a master of his subject and his own personal observations have added to our knowledge of these fevers. His work is not simply a compilation of that of others, but he has used their work well, and here is to be found practically all that is known concerning malaria. The chapters on hæmoglobinuric fever and the protozoa are added as aids to the study of malaria, and the latter is brief and not intended to be exhaustive in any respect. The work really is devoted to malaria in all its forms and is the best description extant of this disease in English. In a second edition, which will doubtless be soon called for, a number of misprints should be eliminated and more

system be used in the abreviations of the titles of articles referred to in the literature. Attention is merely called to this point, as the book is so good that it is a pity that easily corrected errors should have been overlooked.

Report on Plague in the Gold Coast in 1908. By W. J. SIMPSON, M. D., etc. Price 2/. (*London: J. & A. Churchill.*)

To the Under Secretary of State for the Colonies we are indebted for this valuable addition to the literature on plague. Dr. Simpson has made a very careful study of its outbreak at Accra, and a summary of important facts in connection with it is as follows:

"1. The occurrence of bubonic and pneumonic plague in Accra during the first outbreak with a plague epizootic among the rats.

"2. The extension and prevalence of the pneumonic form of the disease beyond Accra to the exclusion of the bubonic.

"3. The prevalence only of the pneumonic form in the second and third outbreaks in Accra.

"4. The spread of the pneumonic form in Accra and in other localities without rat or flea infection.

"5. Numerous cases of the pneumonic form with ill-defined symptoms."

Medical and Surgical Report of the Presbyterian Hospital, in the City of New York. Vol. VIII, December, 1908.

Almost all of the papers in this volume have appeared elsewhere, but here they are handsomely bound together, and present to students evidence that they would not otherwise be apt to have of the scientific work being done by the staff of the hospital. This is the real value of these publications, and they are to be encouraged. There are twenty-four articles, with many illustrations, covering widely both medical and surgical subjects.

Burdett's Hospitals and Charities, 1909. The Year Book of Philanthropy and Hospital Annual. By SIR HENRY BURDETT, K. C. B., K. C. V. O., etc. (*London: The Scientific Press, Limited.*)

It is a pity that there is no American publication corresponding to this annual, which is of great value to all those interested in hospital administration. It is so much appreciated by hospital superintendents that it needs no special praise or recommendation. This volume contains an especially interesting paper on "The Nursing Department and Its Cost," which is one of the most serious questions to-day to all superintendents. It requires much combined study on their part for its proper solution, as its difficulties are very great in this country, where the number of properly educated women who desire to take up nursing as a profession is not equal to the demand. The statistics furnished annually by Sir Henry on cost of hospital administration are invaluable, as there is no other source of this information. Without the Year Book the gap in our knowledge concerning this point could not be filled.

Department of Commerce and Labor, Bureau of the Census. S. N. D. NORTH, Director. Mortality Statistics, 1907. Eighth Annual Report. (*Washington: Government Printing Office, 1909.*)

Since the last report there has been no increase in the registration area of vital statistics. This is to be regretted, for the United States are of all the large nations the only people without a satisfactory registration of these important figures. The difficulties of a uniform and accurate registration for all the States are great, but not insuperable, and it is to be hoped that with the continued aid of the American Medical Association and other scientific bodies, complete registration will be secured finally.

Perhaps the most astonishing figures in the death statistics are those of typhoid fever. They are a national disgrace. The mortality from this disease in certain cities in Pennsylvania are due to simple carelessness and indifference, if not criminal negligence, on the part of their legislative bodies. No such evil record is to be found in Great Britain or Europe, and we should be ashamed of it, but unhappily are not as a people, any more than we are by our appalling number of railroad accidents, with their killed and injured. There are other towns with similar bad records, but there is more excuse for it there than in Pennsylvania.

There is much of interest in this report in regard to scarlet fever, measles and other epidemic diseases, but until we know more about their cause, it is quite impossible to explain their existence and prevalence in certain places. Undoubtedly with greater precaution by the boards of health, their prevalence might be much diminished.

The value of the report is in keeping before the medical profession and the public at large the need of greater care in the prevention of all forms of disease, which, as has been so often said, is better than the cure.

Handbook for Attendants on the Insane. Fifth edition, revised and enlarged. Published by the authority of the Medico-Psychological Association. Price $1.00. (*Chicago: W. T. Keener & Co., 1909.*)

This English work was published first in 1885 and has met with deserved success. It is intended for both nurses and attendants, and though small in size, is an excellent manual. Its only drawback is that it attempts to include too much. Book I, Section 1, is devoted to Anatomy and Physiology; 2, to General Hygiene and Causation of Disease; 3, to Accidents, Emergencies, First Aid; 4, to General Symptomatology of Bodily Diseases, etc.; 5, to The Nursing of Bodily Diseases. Book II, Section 1, deals with The Nervous System; 2, with the Mind in Health; 3, with the Mind in Disease; 4, with the General Care and Nursing of the Insane; 5, with Diseases of the Nervous System; and 6, with General Duties of an Attendant. There is also an Appendix and Index. It seems as though this was too much to be comprised in one volume of very moderate size. The editors, however, have produced a very serviceable work, especially for asylums where the training schools for nurses are not of the first class: and yet where it is all essential that the attendants should have a simple work to guide them. For this object this book is most excellent, and would be hard to improve upon.

The Medical Annual—A Year Book of Treatment and Practitioners' Index—1909. Twenty-seventh Year. Price 8s. 6d. (*Bristol: J. Wright & Co.*)

The contributors to this annual are both American and English, and with a large number to assist, the progress in the medical sciences during the past year is well described. The work is divided into three parts: I, The Dictionary of Materia Medica and Therapeutics; II, The Dictionary of Treatment; III, Miscellaneous. There is a good index, also a list of the most important medical works published during the past year, and other information of use to the general practitioner. The three parts are arranged alphabetically, so it is easy to turn to any subject under consideration, and find out what new facts about it may have been discovered within a year. The book is well printed on thin paper, supplied with many excellent illustrations and is a useful work of reference.

Transactions of the Society of Tropical Medicine and Hygiene, 1907-1908. (*London: Bedford Press, 1908.*)

This is the first volume of the transactions of the English society, and it is replete with important contributions for the study of tropical diseases. There are papers on the Sleeping Sickness, Malaria, Oriental Sore and its Parasite, Filariasis, Kala-Azar, Dysentery, etc. From the English have already come many important discoveries in the illnesses of hot climates, and with the

formation of this society doubtless others will be made by them, for it has already stimulated still more actively the pursuit of these studies. The transactions of the society are sure to become one of the most important sources of knowledge in this branch of medicine. The report is attractively printed.

Publications of the Massachusetts General Hospital, Boston. Selected Papers by the Staff. (*Boston: The Barta Press, 1908.*)

All of these papers have appeared elsewhere in medical literature, but they have been uniformly reprinted with a consecutive pagination by the hospital and the volume presents a neat appearance and is convenient of reference. It is interesting to read in Cabot's "Complete Removal of the Prostate" that the author has reached the conclusion, after repeated operations, that the perineal operation is to be preferred to the supra-pubic. He believes that the removal of the prostate by the perineal route is more complete, and the danger of complications and hemorrhage also diminished. He gives a report of 65 cases, with two deaths, both due to causes not connected with the operation. Another very valuable and timely paper is Porter and Whites' "Multiple Carcinomata Following X-ray Dermatitis." After reading it one cannot help approving the author's recommendation of "the early excision of all persistent X-ray ulcerations in order that subsequent malignant degeneration may be prevented." The volume as a whole is most creditable to the staff of the Massachusetts General Hospital.

The Herter Lecture (*New York, 1908*) *on the Fluids of the Body.* By Ernest H. Starling, M. D., F. R. C. P., F. R. S., etc. Price $2.00. (*Chicago: Keener & Co., 1909.*)

In this extremely interesting book Dr. Starling presents very clearly the whole question of the movements and interchanges of the fluids of the body. In order to do this the physical properties of protoplasm in all their surprising complexity are first considered, especial stress being laid upon the importance of the newer and foreshadowed knowledge of the properties of colloid materials. Upon this basis is built up the discussion of the osmotic relationships of cells and the question as to the part played by the vital properties of the cells as such and as distinguished from mere obedience to physical laws. The various movements of the fluids of the body are taken up in order in a way which involves the discussion of most of the organic functions, so closely do they depend upon these movements and upon the maintenance of a suitable balance of the fluids. The last chapter is devoted to a consideration of the causation of dropsy, in the course of which several perfectly plausible but surprising arguments are brought forward.

The book is very readable, in spite of the necessarily great concentration of so much material into small space and is by far the most satisfactory presentation of the whole subject. Its clearness is rendered more valuable by the fact that much of the original work upon which it is based is Dr. Starling's own.

Principles of Pharmacy. By Henry V. Arny, Ph. G., Ph. D., Professor of Pharmacy, Western Reserve University, Cleveland. Illustrated. Price $5.00. (*Philadelphia and London: W. B. Saunders Company. 1909.*)

There are so many excellent works on these principles that to make a new work acceptable the author must introduce some new feature, and this the author has done by adding a couple of chapters on the chemical theories of inorganic and organic bodies used in pharmacy. These brief résumés will be appreciated by many students of pharmacology. The book is divided into seven parts: I, Pharmaceutic Operations; II, Galenic Pharmaceutic Preparations; III, Inorganic Chemistry; IV, Organic Chemistry; V, Pharmaceutic Testing; VI, The Prescription; VII, Laboratory Exercises. The work as an entity can be recommended. It is clearly written, well arranged and abundantly illustrated; and the publishers have done their work well also, for although a large volume, it opens readily at any point and remains open—a very essential point in a heavy volume. The printing is excellent, the different types used being all clear cut.

Experimental Pharmacology. A Laboratory Guide for the Study of the Physiological Action of Drugs. By Charles Wilson Green, Ph. D., Professor of Physiology and Pharmacology, University of Missouri. Third edition, revised, with 37 new illustrations. Price $1.00. (*Philadelphia: P. Blakiston's Son & Co., 1909.*)

The book is divided into two parts, "The Action of Drugs" and "Operations, Apparatus and Special Methods." The instructions are clearly given, and with this work to guide him any competent student under careful supervision can readily obtain a secure fundamental knowledge of the action of a number of the most important drugs.

Third Report of the Welcome Research Laboratories, at the Gordon Memorial College, Khartoum. (*London: Baillière, Tindall & Cox, 1908.*)

The variety of subjects treated in this volume makes it one of exceptional interest. The report is a most handsome one, richly and beautifully illustrated, making it a splendid model for others to copy. It is impossible to more than enumerate briefly a few of the papers to show the general scope of work undertaken under the guidance of Dr. Arthur Balfour, the director, who is to be congratulated on the studies presented by himself and staff. There are papers on Trypanosomiasis, Hæmogregarines, Piroplasmosis and Spirochætosis, by the director, and reports by others on Sleeping Sickness, Kala-Azar, Poisonous Snakes, Mosquitoes, Helminthes, Medical Practices and entomological and ethnographical questions, etc. The report is most valuable as a contribution to the knowledge of tropical diseases.

The Ophthalmic Year Book, Vol. VI. Containing a Digest of the Literature of Ophthalmology, with Index of Publications for the Year 1908. By Edward Jackson, M. D., George C. de Schweinitz, M. D., and Theodore B. Schneideman, M. D. Illustrated. (*Denver: The Herrick Book & Stationery Company, 1909.*)

Under the able editorship of these three well-known oculists, the Year Book is a valuable work of reference to all devoted to the diseases of the eye, and to others who are anxious to study the literature on the relationship of eye troubles to general diseases. The work is well compiled, and the different affections of the eye so arranged that it is easy to make use of the volume when searching for special topics.

Retinitis Pigmentosa. By William T. Shoemaker, M. D. (*Philadelphia: J. B. Lippincott Company, 1909.*)

This is a very excellent monograph on the subject of Retinitis Pigmentosa, and it has been so regarded by a number of competent reviewers since it was awarded the Alvarenga Prize of the College of Physicians of Philadelphia in 1908.

The author has made a very careful study of the literature bearing on this subject and in connection therewith has carefully analyzed the findings in seventeen cases occurring in two "deaf and dumb" institutions. In addition to studying the ophthalmological changes in the eyes, the author has carefully considered the visual fields, the refraction of the eyes, the order of birth of the children (a unique table from which we derive the conclusions that these patients are just as apt to be among the first born as last born) and the physical condition of the patients.

We consider the facts very definitely found out in regard to

the urine and blood showing no changes and that there are in very many cases no scotomata as valuable contributions to our more complete knowledge of this subject.

In fact, almost any point which the reader might wish to find out regarding retinitis pigmentosa will be found covered satisfactorily and definitely in this book, and furthermore, it is written in a very pleasing and attractive style.

B. B. BROWNE, JR.

A Text-Book of the Diseases of the Ear. By PROF. DR. ADAM POLITZER. *Translated and edited by* MILTON J. BALLIN, Ph. B., M. D. and CLARENCE L. HELLER, M. D. Fifth edition, revised and enlarged. (*Philadelphia: Lea & Febiger, 1909.*)

Politzer's book on the "Diseases of the Ear" has been before the public a number of years and has always been endorsed in the highest terms by those interested in the study of otology. Certainly no book on the ear deserves warmer praise than this present edition, the fifth. Everything in regard to the hearing organ is thoroughly covered and we can find no omissions, be they of large or small importance. The editors have wisely substituted paragraphs concerning the requirements for enlistments in the army and navy of the United States and Great Britain for similar paragraphs in the German edition regarding the requirements for the army and navy of Austria and Germany, and in every way the book is adapted to the needs of the American student.

An attractive feature, especially for the more advanced worker, is the very generous reference to the work of others in the field of otology, so that one has not only Politzer's views, which are unusually sound and conservative, but also learns how the same points may be regarded by others, and Politzer discusses or quotes their work with fairness and fullness, so that one rarely feels the need of personally looking up the references for detailed information.

Altogether this book contains a mine of information about otology which is both accurate and authoritative, and we hereby recommend it to anyone who desires to read up on any particular point about the ear. We wish to single out for especial commendation the chapter on the Anatomy and Physiology of the Sound-Perceiving Apparatus. Many authors of books on the ear refer the reader to his Anatomy and Physiology for knowledge of this subject, but unfortunately the anatomies and physiologies do not discuss the questions from the otologist's standpoint. Politzer, however, has written a splendid chapter, displaying not only an accurate knowledge of this subject, but a wide acquaintance with the recent literature, which he has thoroughly sifted and digested, and presents in an interesting manner to the reader. We would certainly wish to put Politzer's "Diseases of the Ear" (fifth edition) on any shelf of modern medical classics.

B. B. BROWNE, JR.

Practical Physiological Chemistry. A book designed for use in courses in practical physiological chemistry in schools of medicine and of science. By PHILIP B. HAWK, M. S., Ph. D., Professor of Physiological Chemistry in the University of Illinois. Second edition, revised and enlarged. (*Philadelphia: P. Blakiston's Sons & Co., 1909.*)

The appearance of the second edition of this work of Dr. Hawk so soon after the original edition shows that it has been appreciated, and, it would seem, the recognition is deserved.

As the title indicates, the contents of the volume relate especially to physiological chemistry, the pathological aspects being left practically untouched. The methods given are the newest, and the attempt has evidently been made to bring the present edition up to date. A new chapter on Enzymes and their Action has been added. While the clinical side is largely disregarded, there is much in the volume, usually omitted from the books on clinical diagnosis, that may be found useful to the laboratory worker in medicine. It is not, however, a book to be recommended to physicians generally, as it is "designed for use in courses in practical physiological chemistry . . . ."

Diseases of the Spinal Cord. By R. T. WILLIAMSON, M. D., F. R. C. P. Pp. XI, 432. (*London: Henry Frowde and Hodder & Stoughton, 1908.*) *Oxford Medical Publications.*

This work is based on lectures which have been given at the Manchester Medical School, to which some additions have been made. The author points out that the work is not intended to be exhaustive, but to serve as an introduction to the subject and as a text-book. The work opens with sections on the structure of the spinal cord, the pathological histology and the functions. Following this is a chapter on the diagnosis and localization of diseases of the spinal cord, which is excellent and easily understood. Following this the various diseases are taken up, being divided into four main groups: (1) Diseases causing symptoms of a transverse lesion of the cord; (2) diseases causing atrophic paralysis; (3) diseases causing spastic paralysis; and (4) diseases in which ataxia is a prominent symptom. Following this is a section on the lesions due to inflammatory conditions, tuberculosis and syphilis. An appendix gives the chief methods of pathological examination of the cord. Altogether the work is to be commended, particularly for its clearness and definite teaching. It should be especially useful for the general practitioner and medical students.

Illustrations of the Gross Morbid Anatomy of the Brain in the Insane. A Selection of Seventy-five Plates Showing the Pathological Conditions Found in Post-Mortem Examinations of the Brain in Mental Diseases. By I. W. BLACKBURN, M. D., Pathologist to the Government Hospital for the Insane, Washington, D. C. (*Washington: Government Printing Office, 1908.*)

The Department of the Interior has just published this valuable volume. The illustrations are beautifully reproduced and opposite each one is the descriptive autopsy note. To neurologists, pathologists and others this work will be most important, for the seventy-five illustrations embody all the commoner affections of the brain; and the photographs from which the reproductions are made, were so perfectly taken that one can learn almost as much from them as from the brain itself. Such a publication is a credit to our government.

Practical Bacteriology, Blood Work and Animal Parasitology. By E. R. STITT, M. D., etc. Price $1.50. (*Philadelphia: P. Blakiston's Sons & Co., 1909.*)

This is a neat, round-cornered, pocket manual, with the faults and virtues incident to extreme compactness. There are included with the text in the 294 octavo pages, "Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes," together with an appendix on diseases of unknown etiology, on the preparation of "normal" solutions, and on general histological technic. At first one is delighted that so much can be interestingly put in such a narrow space, and then one begins to deplore it. The treatment, while crisp and attractive, cannot but be inadequate; while too often the student is brought into acquaintance with phenomena to the disregard of the principles that underlie them. It is a pity that the author's evident talents should have found employment so much in the feat of compression.

This is not to say that the book quite lacks usefulness. The birds-eye view that it gives of parasitology, a subject distressingly complex at first encounter, is of itself worth while—even though some important individual parasites are scarcely noted except for their classification. It is not only refreshing to find the general

principles of immunity expounded plainly within five pages, but as an introduction to more extended reading this may have value. Further, there are distributed throughout the book many most useful technical suggestions. As an accessory laboratory guide it has distinct merits.

Nevertheless, for the undergraduate the trend of the book is a bad one. The didactic, "take six drops of this, add to it seven drops of that, and you will get such and such a reaction," is everywhere evident. One may well doubt the usefulness of a key for the identification of bacteria that differentiates streptococci from pneumococci purely on the basis of form. And to furnish formulæ for serum diagnosis after such a meager introduction to the principles of the subject as is here given seems at least unwise.

The general form of the volume is attractive. In addition to excellent illustrations from Kolle and Wassermann, Williams, Abbott and other sources, there are a number of fairly clear pen-and-ink drawings.

A Text-Book of General Pathology for the Use of Students and Practitioners. By J. Martin Beattie, M. D. (Edin.), etc., and W. E. Carnegie Dickson, M. D. (Edin.), etc. (*Philadelphia: P. Blakiston's Son & Co., 1908.*)

This book, on General Pathology, is well written, compact and well adapted to student use. Many of the illustrations are good, but there are many which convey but little information to the reader. The references are not numerous, and at times too much restricted to the works of English workers. It does not seem to the reviewer that this new book has any great advantages over some of the text-books already in use. The editors in their preface state that the book is based on the teaching of the Edinburgh School, and it is of interest on this account.

Rotunda Practical Midwifery. By E. Hastings Tweedy, M. D., F. R. C. P. I., and G. T. Wrench, M. D. (*London: Henry Frowde and Hodder & Stoughton, 1908.*) *Oxford Medical Publications.*

In the preface the authors state that this book is not intended as a treatise on midwifery, and, therefore, they have omitted "all that is theoretical and not immediately useful to the practitioner."

The volume is written with the idea of giving in a concise and brief form the practical points in the treatment of obstetrical cases, and is based on the methods employed at the Rotunda Maternity; in fact the book is merely a description of Rotunda methods and in an appendix one finds the statistics of this hospital for several years past.

The book is well arranged, the style is clear, but somewhat brief, the illustrations are for the most part quite diagramatic, but serve their purpose fairly well.

For readers desiring a knowledge of Rotunda methods the book can be recommended, but for others there are several works on obstetrics which would be more useful than this one. F. C. G.

Department of Public Charities, New York City Hospital. Medical and Surgical Report, No. 1, 1909. (*New York: Martin B. Brown Company.*)

This volume is welcome, for it is a marked sign of progress in the administration of the New York City Hospital, where the material for such a report is abundant, and its publication will stimulate the Medical Board, who for years have worked hard against obstructive difficulties. The hospital to-day is in better order than ever before, and the outlook is hopeful that within a comparatively short time, it may be a really creditable institution to a great city. There are 24 papers from 8 departments of the hospital, of, as usual in such reports, varying length and value; some of them illustrated. The editors are to be congratulated on the appearance of this volume, and we trust that the Department of Public Charities will aid them still further in their work, so that the future reports will be still more thorough and complete.

Hydrotherapy. A Brief Summary of the Practical Value of Water in Disease for Students and Practitioners of Medicine. By William H. Dieffenbach, M. D. Price $3.00. (*New York: Rebman Company, 1909.*)

That hydrotherapy will relieve as many conditions as the author believes, seems somewhat doubtful, but anyone interested in the treatment can secure helpful information from this somewhat unnecessarily extended work; not "brief," as stated in the title, since the book contains about 250 pages.

Legal Medicine and Toxicology. By R. L. Emerson, A. B., M. D. (Harvard). (*New York and London: D. Appleton & Co., 1909.*)

As an introduction to the standard works on legal medicine this book will serve as a safe guide. It is a text-book, compiled from the writings of others and lacks any marked distinction.

Seven Hundred Surgical Suggestions. Practical Brevities in Diagnosis and Treatment. By Walter M. Brickner, B. S., M. D., etc., Eli Moschcowitz, A. B., M. D., etc., and Harold M. Hays, M. A., M. D. Third series. Price $1.00. (*New York: Surgery Publishing Company, 1909.*)

These "Suggestions" might serve some students as a form of quiz compend in differential diagnosis, but it is not clear that they would be of any real help to anyone else, and even for students they cannot be recommended. If doctors depend on such "Suggestions" for knowledge of surgery, they are more apt to be wrong than right in their diagnoses. The medical profession is not aided by such a trifling work.

The J. B. Lippincott Company have lately published some "Clinical Diagrams, Designed for the Graphic Representation of Clinical Phenomena for Preservation with the Notes of Cases," by James C. Wilson, M. D. There are other similar diagrams on the market, but these are as good as any of them. They are arranged in perforated sheets of six diagrams on each—¾ front and back views of the body—(male and female) and two side views (male). The use of these diagrams would be greater if the back side of these plates was gummed, so that they could easily be attached to the notes. The price of these diagrams is fifty cents for 25 sheets.

The Blood in Health and Disease. By R. J. M. Buchanan, M. D., F. R. C. P. 8vo. pp. xvi-318. 31 figs. XX plates. (*London: Henry Frowde and Hodder & Stoughton, 1909.*) Price, $4.50.

This volume of the Oxford Medical Publications is intended as a guide to students and practitioners in clinical hematology. The press work and plates are excellent, the former being marked by a few rather glaring typographic errors. The plates are drawn by the author and unusually well reproduced in color.

The first five chapters are devoted to a general description of the blood and a detailed account of technical methods for the determination of the number of cells, hemaglobin concentration, coagulability, viscosity, calcium content, fixation—standing and momentary. The defect of this section is one common to most works on hematology for the student; *i. e.*, the lack of critical discrimination between methods or discussion of their accuracy.

Chapters VI and VII on the morphology of erythrocytes and leucocytes, respectively, are very well done and clearly illustrated by the colored plates. There is the usual nebulous discussion of polychromasia, basophilia and the nuclear problem with regard to the red cells. While the chapter on leucocytes contains some remarkable hypotheses in regard to their flagellation and fer-

tilization, Chapter VIII on the origin of leucocytes is a fair presentation in a condensed form of this still unsettled question.

The remaining four chapters take up the various changes in the blood in disease (except the parasitic diseases of the blood) and present a generally satisfactory objective description of these changes, together with a résumé of the clinical picture and course and some suggestions as to treatment.

A good index concludes the volume. It is on the whole a fairly good elementary reference work on hematology.

THOS. R. BOGGS.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pædiatrics, Obstetrics, Gynecology, Orthopædics, Pathology, Dermatology, Ophthalmology, Otology, Phinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners. Edited by W. T. LONGCOPE, M. D., Philadelphia, with the collaboration of WM. OSLER, JOHN H. MUSSER and others. Vol. III. Nineteenth Series. 1909. (*Philadelphia and London: J. B. Lippincott Company, 1909.*)

There are several papers in this volume worthy of special mention. Among them are "Exotic Dysenteries" by Dr. Paul G. Woolley, late of Siam, but now of Cincinnati University; "A Study on the Pathology and Surgical Treatment of Bilocular Stomach," by Charles Greene Cumston, of Boston; "Women in Medicine," by Dr. James J. Walsh, of New York, and "The Radiographic Examination of the Gastro-intestinal Tract from a Practical Standpoint, Especially in Connection with the Diagnosis and Treatment of Gastro-Enteroptosis," by Dr. Henry K. Pancoast, of Philadelphia.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART A. HARE, M. D., *and* H. R. M. LANDIS, M. D. Vol. III. September, 1909. Diseases of the Thorax and Viscera, including Heart, Lungs and Blood-vessels, Dermatology and Syphilis, Obstetrics, Diseases of the Nervous System. (*Philadelphia and New York: Lea & Febiger, 1909.*)

The contributors to the present volume of "Progressive Medicine" are Drs. Edward P. Davis, William Ewart, William S. Gottheil and William G. Spiller. The first article contains a valuable résumé of our latest knowledge of tuberculosis. As long as such careful reviews are accessible one is less unhappy because the United States has no publication devoted wholly to the scientific study of tuberculosis. There is also much interesting and new matter connected with diseases of the heart and lungs. Under the topic, "Intermittent Claudication" a plea is made for persevering treatment of it by internal remedies, hot baths and electricity.

Under "Dermatology and Obstetrics" there is an interesting résumé of a paper entitled "Comparative Dermatology," which gives a somewhat full review of the diseases of the skin prevalent among the domestic and other animals. The author, under the heading, "Syphilis," quotes with approval the statement that the disease is found recorded in Europe and Asia from the earliest historical times. A plea is made for the systematic treatment of syphilis in all large centers of population. The author believes that a single hospital with 50 beds is wholly inadequate for the proper treatment of syphilis in London and that a hospital with 60 beds is equally inadequate for a population of 4,000,000 people in New York. Full particulars are also given of the Wasserman Test. The longest paper is that on obstetrics and the briefest is upon diseases of the nervous system. All the contributions are valuable and the selection of topics is discriminating.

Neurasthenia. By GILBERT BALLET, Professeur agrégé à la Faculté de Médicin de Paris. Translated from the third French edition by P. CAMPBELL SMITH, M. D. Illustrated by seven figures. (*Published by Paul B. Hoeber, 69 East 59th Street, New York, 1909.*) Price, $2.00 net.

This is an extremely satisfactory book and should go into the hands of every medical man who has to do with neurasthenic patients either in public hospitals or private practice. The author believes neurasthenia to be a somatic disease of the nervous system in contrast with hysteria which he regards a psychical disease. He does not think that the condition was first described by Beard, but mentions Galen, Stoll, Sydenham and Robert Whytt as preceding him. He might also have added the name of Van Deusen in America as preceding him by several years. He believes that universally nervous exhaustion is due primarily to bad heredity and faulty methods of education which are accentuated by excessive intellectual work, over-pressure in schools, moral over-pressure with depressing emotional strain, the artificial and unsatisfying existence known as "society life," muscular over-pressure, various auto-intoxications, organic disease, frights and traumatisms, and finally digestive, genital and utero-ovarian disorders. The chapters which follow, entitled, "Leading Symptoms" and "Secondary Symptoms," are full and illuminating, but unfortunately too much in detail to be summarized without doing injustice to the book. He gathers the myriad forms of neurasthenia into four groups: 1. Cerebro-spinal neurasthenia, including irritable spine and railway spine; 2. Neurasthenia of women; 3. Genital neurasthenia; 4. Traumatic neurasthenia; the latter being regarded as a true neurasthenia and not as a form of hysteria. His chapter entitled "Need of an Exact Diagnosis," gives a very clear view of the distinction which ought to be drawn, and frequently is not drawn, between those who suffer from neurasthenia, on the one hand, and those on the other who have obsessions, doubts and phobias, or who have melancholic depression or hypochondriacal fancies and are something more than neurasthenics.

In the chapter on "Etiology" he discusses the theories of its gastric origin; *e. g.*, by auto-intoxication, vitiation of nutrition through dyspeptic states and ptosis of the abdominal viscera and finds them insufficient to account for neurasthenia. He regards them rather as symptoms, important symptoms, which may contribute largely to keeping up a neuropathic state. He has the same feeling about utero-ovarian affections, sexual excesses and the like, as competent to produce neurasthenia, and regards them as symptoms rather than causes. He also dismisses the vaso-motor theory of Anjil and finally states that the real trouble is in the cells of the cerebral cortex. Of course this is pure theory and is only of value from its bearing upon the treatment of the disorder. The chapters on "Prophylaxis" are excellent and should be read by all who are consulted in the education and training of children.

The section of the work which deals with treatment is probably the most valuable portion of the book. The author believes in psychotherapy and mental suggestion in the waking state, but he does not recommend hypnotic suggestion. He has great faith in diet and gives many directions as to food and general regimen. He also discusses hydrotherapeutics and climatic treatment.

Dictionary of Ophthalmic Terms with Supplement. By EDWARD MAGENNIS, M. D., D. P. H. (*Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co.*)

This little book of 67 pages will be mainly useful to medical students who will find in it many words which have not yet found their way into the older medical dictionaries. It is carefully compiled and will be helpful.

The Sexual Disabilities of Man and Their Treatment. By ARTHUR COOPER, Consulting Surgeon to the Westminster General Dispensary. (*New York: Paul Hoeber, 69 E. 59th Street, 1909.*) Price, $1.00 net.

This is a sensible, judicious book on sterility and impotence in the male and can be commended to the general medical practitioner. If its instructions were faithfully followed we should meet with fewer sexual hypochondriacs.

Mind and its Disorders. A Text-book for Students and Practitioners. By W. H. B. Stoddart, M. D., F. R. C. P., Assistant Physician to Bethlehem Royal Hospital. (*Philadelphia: P. Blakiston's Son & Co., 1909.*)

The condensed comprehensiveness of this work is indicated by the fact that within 481 pages are compressed a 100-page discussion of normal psychology, one half as long on the psychology of the insane, 300 pages of clinical psychiatry, followed by chapters on the legal relations of the insane, and the histologic examination of the nervous system, including cytodiagnosis. For a brief work this is an ambitious survey. The book seems calculated primarily to meet the needs of the student beginning the study of psychiatry, and in this object it may be said to be successful, although exposed, in common with all short treatises, to dangerous tendencies toward dogmatism. The clinical descriptions are for the most part good, but necessarily very much condensed. The subject is handled essentially from the symptomatologic view-point, and the method of grouping reflects the Kraepelinian classification. There are many excellent observations concerning general and special treatment of patients, and other questions of attitude and care which are likely to arise in the routine of hospital work. The book is supplied with numerous illustrations.

F.

Dietetics for Nurses. By JULIUS FRIEDENWALD, M. D., Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and JOHN RÜHRAH, M. D., Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Second revised edition. (*Philadelphia and London: W. B. Saunders Company, 1909.*) $1.50 net.

A notice of the first edition of this excellent work appeared in the BULLETIN for May, 1905. The issue of a second edition has permitted the presentation of practically a new portion on milk and the addition of a chapter on food preservation and adulterations. The various methods for detecting the latter are valuable and timely at present in view of the awakening of public interest in pure food.

Medical Sociology. A Series of Observations Touching upon the Sociology of Health and the Relations of Medicine to Society. By JAMES PETER WABASSE, M. D., Surgeon to the German Hospital, etc. (*New York and London: D. Appleton & Co., Publishers, 1909.*)

This volume contains essays designed both for the layman and the physician. The former relate to such topics as recently have commanded the attention of the non-medical public as "The Social Evil," "The Alcohol Question," "Christian Science," "Exercise and Health," etc. The latter relate more to medical science, education or art. They are well worth reading, although neither profound nor striking in matter or style. Some of them are very short, containing only a few sentences. Sometimes, as in the essay entitled "College Preparation for the Study of Medicine," there seems a confusion of thought and a special pleading for the non-college educated man. He says: "When the college gives a training that is more practical and helpful and less devoted to the things of minor importance, when it has freed itself of the ancient traditions of culture than may be required to have enjoyed its benefits before being allowed to take up medicine. The medical school that requires the bachelor's degree for admission excludes many of the positively objectionable men, but it also shuts out the one who occasionally comes along who would rise above all the rest and who could be of the greatest service to medicine and to humanity." How does the author know this to be true? How also does he know that to be destitute of a college degree necessarily confers such remarkable powers upon a young man?

Treatment of the Diseases of Children. By CHARLES GILMORE KERLEY, M. D., Professor of Diseases of Children, New York Polyclinic Medical School and Hospital, etc. Second revised edition. Octavo of 629 pages, illustrated. (*Philadelphia and London: W. B. Saunders Company, 1909.*) $5.00 net.

This second edition of Dr. Kerley's book is fully up to the expectation of those familiar with the first edition.

As stated in the preface it is intended for the general practitioner and there is no more useful book on the subject in the language for the purpose.

Written almost entirely from a large and varied personal experience, practical usefulness is its keynote throughout.

Such subjects as clothing, bathing, airing, exercise, sleep, etc., are considered in the detail their great importance demands.

Instructions as to feeding the normal, the delicate and the sick child are simple, practical, and in accord with the best teaching.

It is interesting, however, to note the very definite position assumed as to butter-milk feeding, as frequently practiced to-day, and the calorimetric standard feeding, considerably in use since its introduction by Heubner several years ago. He considers both unnecessary and the former generally harmful. This position is rather at variance with many observers. While it may be certainly agreed that sweet milk adapted to the child's digestion is better and while the remarkable results in atrophic and diarrhœal conditions reported by some overly enthusiastic can scarcely be often expected, there are certain infants who cannot digest ordinary cow's milk, however modified, but who seem able to digest and assimilate properly prepared butter-milk. For such infants it would seem the best substitute, whether its value depends upon living lactic acid bacilli, a changed proteid, a low fat or the three combined.

Of interest, too, is the author's view of the uselessness of subcutaneous injection of salt solution in infant practice. The reviewer's experience entirely coincides wth Dr. Kerley's, not recalling a single instance where definite benefit could be traced to this procedure.

The volume contains a chapter on vaccine therapy and a very useful one on gymnastic therapeutics. It is conservative throughout, and can be fully recommended for the purpose for which it is intended.

R. A. U.

Studies on Immunity. By ROBERT MUIR, M. A., M. D., etc., in collaboration with CARL H. BROWNING, M. D., ALEXANDER R. FERGUSON, M. D., and WILLIAM B. M. MARTIN, M. B. (*London: Henry Frowde and Hodder & Stoughton, 1909.*) Price $3.00. Oxford Medical Publications.

In this interesting book the author has brought together and edited a series of papers previously published in various journals, the work having been done in collaboration with others as stated in the title.

The scope of the book is restricted, but such subjects as are introduced are treated in a very thorough manner. Under Part I the properties of hemolytic sera are discussed. Taken up in order are the properties of immune bodies, of complements and their modifications, of anti-immune bodies, and the hemolytic receptors of red corpuscles. Part II deals with the properties of an anti-

serum to a serum and with deviation of complement and its relation to the precipitin test. Part III consists of a section on opsonic action and one on the bactericidal action of normal serum.

The author has been very successful in bringing together a series of separate papers in such a way as to present continuity and logical sequence.

For all of the conclusions drawn illustrative experiments are given with sufficient detail to be easily intelligible without being tedious.

Reference to the literature is constantly made as most of the problems dealt with are ones which have been the object of a great deal of investigation, but a complete bibliography is not attempted.

Extensive and careful experimental work has been carried out by the author and his collaborators on such problems as the absorption of multiple minimum hemolytic doses of serum by corpuscles, the dissociation of immune-body from red blood cells, the inability of antigen saturated with immune-body to produce immune-bodies when injected into animals, fate of the immune-body after hemolysis, etc.

The author leans towards Bordet's conception of the immune-body as a "substance sensibilisatrice" and thinks that complement may unite directly with cell receptors. On the other hand he shares Ehrlich's views on the multiplicity of complements, although he does not carry the division as far as Ehrlich does. He reports the observation of a form of agglutination which is dependent on the presence of two substances, immune-body and complement. The thermo-labile opsonin of normal serum is considered as belonging to the group of complements, immune opsonin having properties which differentiate it quite sharply from normal opsonin.

The author brings forward very good evidence which calls into question much of the work which has been done to establish the existence of anti-complements.

The book is full of interest to students of immunity.

W. L. Moss.

A Practical Treatise on Diseases of the Skin for the Use of Students and Practitioners. By JAMES NEVINS HYDE, A. M., M. D., etc. Eighth and revised edition. Illustrated. (*Philadelphia and New York: Lea & Febiger, 1909.*)

There is no doubt that this edition will be welcomed, for Dr. Hyde has added 250 pages to the preceding one, and his treatise is now the most thorough one in English, as well as most excellent. It is abundantly supplied with illustrations, which are on the whole good, but the coloration of some of the plates is too brilliant to be quite natural. The photographic illustrations are first rate. Dr. Hyde is a master of his subject so that it is unnecessary to praise this work further. All students of medicine will find their difficulties in diagnosticating skin affections lightened by a careful study of this work.

Atlas of the External Diseases of the Eye, Including a Brief Treatise on the Pathology and Treatment. By PROF. DR. O. HAAB. Authorized Translation from the German. Third edition, revised. Edited by G. E. DE SCHWEINITZ, M. D., etc. Illustrated. (*Philadelphia and London: W. B. Saunders Company, 1909.*)

Although one is apt to expect a text-book bearing the names of Prof. Haab and Dr. de Schweinitz to be a good one, the present volume does not do credit to either. In looking over a book of this character one must examine into its merits as an atlas and secondly consider the merits of the subject-matter. In regard to the colored plates many of them are good, but it is very apparent that in many instances the author has gone out of his way to produce extraordinary pictures of ordinary conditions and so mislead the reader. We should wish the plates 22 and 46 to be toned down very considerably. The author seems to have forgotten the fact that his text-book is presumably intended for medical students of some sense, otherwise he would not have countenanced the insertion of at least two extravagant pictures which one would only expect to find in medical museums of a certain type, appealing to the curiosity of the public (see Table 46 (Exophthalmic Goitre and 22 (Eczema of Cornea and Mouth). How Dr. de Schweinitz allowed his name to be attached to any book in which such pictures were allowed to appear is more than the reviewer can understand. Pictures such as these two are offensive, certainly not instructive, and any text-book containing them should hardly be allowed a place amongst first-class medical books. Some of the pictures are such poor representations of the conditions which they are supposed to exhibit that it would have been wiser to have omitted them *vide* Plates 21, 23, 24b, 5a, 14a, 20, 22, 44 and 45. Plates 1 and 2 represent very extreme and rather unusual types of a very common affection, not otherwise represented. The beginner in ophthalmology will have to see a great many eye patients before he will find cases to correspond to many in this book, and that is what we wish to censure in this book. Colored pictures are only of value to the one who does not know, and we think the beginner is not given a clear mental picture when so many unusual types, which probably may make more striking pictures, are presented.

Had the book been entitled "Atlas of Atypical Cases of Common Ocular Affections," it would not have been inappropriately named.

Regarding the text of this book we may say that the author's ideas have not always been translated into the very best English, nor has a logical sequence of ideas always been maintained, nor a due sense of the relative importance of subject-matter been considered by the author. The fact that the observing physician should have good eyesight is almost an axiom and we consider the paragraphs devoted to this subject useless, especially in such a short text-book where space should be at a premium. In other places, also, we find considerable space devoted to the uncommon, while more important facts are omitted. And we call especial attention to this fact, for we assume that this book is intended for those whose knowledge of eye diseases is not large. While this book may please at first sight we feel sure that close inspection will convince most teachers that it will not serve as a very valuable adjunct to the clinic in the teaching of ophthalmology to medical students.

B. B. BROWNE, JR.

Parenthood and Race Culture. An Outline of Eugenics. By CALEB WILLIAMS SALEEBY, M. D., etc. (*New York: Moffat, Yard & Co., 1909.*) Price, $2.50.

It was Francis Galton who first used the term eugenics, and founded a society in England for the study of this science, as it may be called, and the methods to be pursued in the higher development of man; for race culture is a brief definition of eugenics. Dr. Saleeby's outline will be read with attention by many who are interested in this vital social problem,

The question of race culture is one of the most important that confronts all peoples to-day—the effects of alcoholism, syphilis, lead-poisoning, etc., on the present and future generations are matters that are coming to the fore more and more, and under another term than eugenics have already received much attention from students of social problems. These diseases must be controlled in some way before there will be any marked advance in our civilization, and it is these and other points concerning eugenics, which are dealt with in this book.

It is a great pity, however, that the author has not shown more moderation in his enthusiasm for this religion of the fu-

ture. He shows little or no patience with politicians and others who hold different views from himself, and the book is marred by a long and most unseemly attack on the London County Council, which is entirely out of place in a work meant for general reading. In fact, throughout the work the self-conceit of the author is too much in evidence, and he will, by his ill-placed insults make, it is to be feared, more enemies than adherents to his cause. Many of us are mentally astigmatic, but that is no reason why Dr. Saleeby should condemn us all as fools, and worse if we do not see as straight as he does. He has all the faults in his writing of an ardent enthusiast; but a clear outline of eugenics from him, tempered and well arranged, would be a most welcome social service hand-book.

A new subject, as this is, deserves to be most carefully brought before the public to attract and hold their attention, and had Dr. Saleeby shown more consideration for the weakness of others, his book would have been warmly received.

A Text-Book of Materia Medica, Pharmacology and Therapeutics. By GEORGE F. BUTLER, M. D., etc. Sixth edition. Thoroughly revised and enlarged. (*Philadelphia and London: W. B. Saunders Company, 1908.*)

The sixth edition of this work is a volume of 708 pages. The first 60 pages are devoted to an introduction and to a consideration of pharmacology and general therapeutics, 104 pages to pharmaceutical preparations, followed by 463 pages in which the actions of drugs are considered under the following classifications:

Drugs whose chief action is on the nervous system; drugs acting chiefly on the circulatory organs; drugs acting chiefly as vasoconstrictors; drugs acting locally on microorganisms (antiseptics); volatile oils, resins, oleoresins and balsams; antipyretics and antipyretic analgesics; restoratives and alteratives; acids, alkalies, salts; drugs acting chiefly on the gastro-intestinal organs; drugs acting on the respiratory mucous membrane; drugs acting particularly on the uterus; drugs acting particularly on the kidneys; diaphoretics; mineral astringents; topical remedies; organotherapy [this is only allotted three pages; adrenalin is not included here, but described elsewhere].

Serum therapy, opsonins, opsonic index and vaccine therapy are considered in eight pages. Twenty-three pages are devoted to prescriptions. An excellent general index and a handy clinical index occupying 58 pages are appended.

From the standpoint of a general practitioner the author has presented a valuable book, one that is rich in suggestions concerning the therapeutic value of drugs as well as numerous warnings and specific directions which will aid in securing the best results in the practical application of these drugs. In this respect the book will also prove itself very valuable to the student of medicine.

From the standpoint of its value to the student, however, it is a matter of regret that in many instances the theories as to the method of action have not received the consideration which their importance demands, for it is exceedingly desirable that the student should acquire accurate conceptions, where possible, as to the exact method of action of these bodies, and where this is impossible, he should at least have a clear understanding of the current theories relating thereto.

The author ascribes more potency to some drugs than recent investigations would seem to warrant, as for instance in the numerous drugs mentioned by him as exerting a cholagogue action. Again he credits others with exerting a beneficial action where such is really not accepted as the case, as for instance in the administration of thyroid extract in Basedow's disease.

The value of the book is somewhat enhanced by a consideration of some of the most familiar and well tested non-official preparations which have proved themselves of sufficient importance. It is rather surprising, however, not to find either phenolphthalein or atoxyl included in this list.

This book is a valuable addition to the library of the practicing physician as a treatise on materia medica and therapeutics, but is far from ideal as a text-book of pharmacology for the use of the student.

L. G. ROWNTREE.

Modern Medicine. Its Theory and Practice. In Original Contributions by American and Foreign Authors. Edited by WILLIAM OSLER, M. D., Regius Professor of Medicine in Oxford University, England, etc. Assisted by THOMAS MCCRAE, M. D., Associate Professor of Medicine and Clinical Therapeutics in Johns Hopkins University, Baltimore. In seven octavo volumes of about 900 pages each, illustrated. Volume VI, Diseases of the Urinary System, of the Ductless Glands, of the Muscles, Diseases of Obscure Causation, Vasomotor and Trophic Disorders, Medical Aspects of Life Insurance. (Price, $6.00. (*Philadelphia and New York: Lea & Febiger, 1909.*)

The sixth volume of Osler's "Modern Medicine" contains a number of very important sections. Part I—The urinary system with the monographs of John McCrae, Archibald Garrod, James B. Herrick, Thomas R. Brown and Hugh Young. Of these the most noteworthy are McCrae's summary of the present status of the physiology and pathology of renal disease, Herrick's excellent clinical studies of nephritis, and Brown on the various infectious processes in the urinary tract including a very careful study of renal tuberculosis, and Young's discussion of diagnosis by instrumentation is an excellent innovation in the system which fills a long felt want. The chapters on tumors of the kidney and urinary calculi by the same author are particularly good.

Part II, "Diseases of the Ductless Glands," is entirely from the pen of Dr. Dock, whose wide experience and acquaintance with the whole literature of this field make his contributions of the greatest value.

Part III, "Diseases of Obscure Causation," contains a most thorough and interesting discussion of Hodgkins Disease, by Dr. Longcope, whose investigations in this field give his work special worth.

Arthritis deformans is discussed by Thomas McCrae, who has long been identified with the clinical literature of this still very obscure group of diseases.

Chapters on osteomalacia by Dock, and astasia-abasia and adiposis dolorosa, by Daniel McCarthy, conclude the section.

Part IV, "Diseases of the Muscles," contains exhaustive chapters by W. R. Steiner and Daniel McCarthy.

Part V, "Vaso-motor and Trophic Disorders," by Dr. Osler, is in his best vein and covers a field which has been a life-long study with him and in which his personal experience with many of the rarer maladies is unique.

The concluding chapter of this section, by Emerson, covers the rarer diseases of the bones.

Part VI, "Medical Aspects of Life Insurance," by Dr. C. L. Greene, will prove interesting and very practical to the large number of the profession who pass on life risks daily.

Suture of Arteries. An Experimental Research. By E. ARCHIBALD SMITH, M. B., Ch. B., Victoria University, F. R. C. S., England. (*London: Henry Frowde and Hodder & Stoughton, 1909.*) Oxford Medical Publications.

In this little book the author gives the results of his experiments on animals and describes his method of arterial suture, in which he uses the Quill suture for both lateral and end-to-end approximation. This method seems to be a satisfactory one, but is somewhat more difficult than that commonly used in this country.

In the historical chapter the interesting fact is brought out that arterial suture was suggested by Lambert in England, and first successfully carried out by Hallowell, an English surgeon, on June 15, 1759. He used a short steel pin which he passed through the two lips of the wound in the artery, and secured by twisting a thread round it, as in hare-lip. J. S. D.

A Text-Book of Practical Therapeutics. With especial reference to the application of remedial measures to diseases and their employment upon a rational basis. By HOBART AMORY HARE, M. D., B. Sc., etc. Thirteenth edition. Enlarged, thoroughly revised and largely rewritten. Illustrated. Price, $5.00. (*Philadelphia and New York: Lea & Febiger, 1909.*)

One of the most successful of all text-books, this work requires no note to draw attention to its many excellent qualities, upon which the stamp of success has been marked by the numerous editions. That the last is as much up to date as possible is not to be questioned, for Dr. Hare honestly reedits, not merely reprints earlier issues. It is worth while to state that this Therapeutics has already appeared in a Korean edition, and will soon do so in a Chinese one. This is the best proof of its popularity and of its real value to students and practitioners.

Studies in Paranoia, Periodic Paranoia and the Origin of Paranoid Delusions. By NIKOLAUS GIERLICH, Wiesbaden. Contributions to the Study of Paranoia. By M. FRIEDMANN, Mannheim. Translated and edited by SMITH ELY JELLIFFE, M. D. (*New York: The Journal of Nervous and Mental Disease Publishing Company, 1908.*)

This is the second of the series of monographs planned by the editors, Drs. Jelliffe, of New York, and White, of Washington. Dr. Gierlich, in "Periodic Paranoia and Paranoid Delusions," presents the histories of three cases of paranoia which, in his opinion, justify a more favorable prognosis than has formerly been given in this disease. The first was a high government official, 50 years of age, who, after a fatiguing journey of a month, had sluggish digestion, insomnia, irritability and great restlessness, and within a few days delusions of a distinctly paranoid character. These continued for nine days and suddenly disappeared so that he resumed his public duties and remained perfectly well for nine or ten months when he had a recurrence of his symptoms, but recovered after about four weeks. In 1898 he had a third similar attack from which he also recovered and had no return of mental trouble up to the time of his death in 1900 from cancer of the bladder.

In the second case a male, 35 years of age, and a successful merchant, two years subsequent to an apparently happy marriage, became very jealous of his wife, accused her of attempting to poison him and charged her with adultery. He recovered in a very short time, but had a return of his mental disturbance in the following year and a third in 1899. Since then, although he has had threatenings of trouble, he has escaped any active outbreak and has been able to resume his business and has conducted it with success.

A third case was a single woman, 43 years of age, who, commencing with 1898, developed delusions of a paranoid character, from which she recovered after several months, but had a recurrence in 1899 and 1900, but in each case recovered and in 1901 continued perfectly well.

These three cases are not wholly conclusive as to the curability of paranoia, inasmuch as all three had relapses, and the period during which they remained free from further attacks seems much too short, but they show that cases marked by periodicity are more frequent than was formerly supposed and that periods of absolute freedom from mental disturbance occur. No one, however, could say that any of them had attained a stable degree of mental health. Some of the cases mentioned in the second paper ("Contributions to the Study of Paranoia") are rather more convincing because the period of absolute freedom from morbid ideas is longer and the mental state is more stable.

These studies are of value as showing the advantage of a careful study of each case individually. Those who develop paranoid delusions cannot, in the light of our present knowledge, be relegated to incurability, nor are they necessarily incurable, even if the disease has persisted for several years, since in one of the cases mentioned it lasted for two and one-half years and was followed by recovery.

A Treatise on the Principles and Practice of Medicine. By A. R. EDWARDS, A. M., M. D., etc. Second edition, revised. Illustrated. (*New York and Philadelphia: Lea & Febiger, 1909.*)

This second edition of Dr. Edwards' Treatise shows evidence of re-working of the material and is an improvement on the first edition which was reviewed in these pages.

There is much that is good in the work and it is rather better than many of similar scope. The section on parasitic diseases is rather below the average of the body of the work and the illustrations, many of them, very poor. The color work in the plates is often so inferior as to render them valueless.

T. R. B.

BOOKS RECEIVED.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., assisted by H. R. M. Landis, M. D. Vol. III. September, 1909. 8vo. 336 pages. Lea & Febiger, Philadelphia and New York.

A Treatise on the Principles and Practice of Medicine. By Arthur R. Edwards, A. M., M. D. Second and thoroughly revised edition. Illustrated with 100 engravings and 21 plates. 1909. 8vo. 1257 pages. Lea & Febiger, New York and Philadelphia.

Philadelphia General Hospital Reports. Vol. VII. 1908. Edited by Herman B. Allyn, M. D. 1909. 8vo. 272 pages. Printed by the Dunlap Printing Company, Philadelphia.

Medical Sociology. A Series of Observations Touching upon the Sociology of Health and the Relations of Medicine to Society. By James Peter Warbasse, M. D. 1909. 12mo. 355 pages. D. Appleton & Co., New York and London.

Dictionary of Ophthalmic Terms. With Supplement. By Edward Magennis, M. D., D. P. H. 1909. 32mo. 67 pages. John Wright & Sons, Ltd., Bristol. Simpkin, Marshall, Hamilton, Kent & Co., Ltd., London.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by W. T. Longcope, M. D. Nineteenth Series. Vol. III. 1909. 8vo. 296 pages. J. B. Lippincott Company, Philadelphia and London.

A Text-Book of Practical Therapeutics. With Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M. D., B. Sc. Thirteenth edition, enlarged, thoroughly revised, and largely re-written. Illustrated with 122 engravings and 4 colored plates. 1909. 8vo. 958 pages. Lea & Febiger, Philadelphia and New York.

Clinical Manual for the Study of Diseases of the Throat. By James Walker Downie, M. B., F. F. P. S. G. Second edition, revised, and in large measure re-written. With 104 illustrations. 1909. 12mo. 432 pages. James Maclehose & Eons, Glasgow.

Organic and Functional Nervous Diseases. A Text-Book of Neurology. By M. Allen Starr, M. D., Ph. D., LL. D., Sc. D. Third edition, thoroughly revised. Illustrated, with 300 engravings in the text and 29 plates in color and monochrome. 1909. 8vo. 911 pages. Lea & Febiger, New York and Philadelphia.

A Text-Book of Surgery. For Students and Practitioners. By George Emerson Brewer, A. M., M. D. Second edition, thoroughly revised and much enlarged. Illustrated with 415 engravings in the text and 14 plates in colors and monochrome. 1909. 8vo. 915 pages. Lea & Febiger, New York and Philadelphia.

A Manual of Otology. By Gorham Bacon, A. B., M. D. With an Introductory Chapter by Clarence John Blake, M. D. Fifth edition, revised and enlarged. With 147 illustrations and 12 plates. 1909. 12mo. 508 pages. Lea & Febiger, New York and Philadelphia.

A Practical Treatise on Diseases of the Skin. By James Nevins Hyde, A. M., M. D. Eighth and revised edition. Illustrated with 223 engravings and 58 plates in colors and monochrome. 1909. 8vo. 1126 pages. Lea & Febiger, Philadelphia and New York.

Surgical Diagnosis. By Edward Martin, M. D. Illustrated with 445 engravings and 18 plates in colors and monochrome. 1909. 8vo. 772 pages. Lea & Febiger, Philadelphia and New York.

A Handbook of Medical Diagnosis. In four parts. I. Medical Diagnosis in General. II. The Methods and Their Immediate Results. III. Symptoms and Signs. IV. The Clinical Applications. By J. C. Wilson, A. M., M. D. 408 text illustrations and 14 full-page plates. [1909.] 8vo. 1435 pages. J. B. Lippincott Company, Philadelphia and London.

Leucopathies, Métastases, Albuminuries et Ictères Leucopathiques. Par le Dr. Emile Feuillié. 1909. 8vo. 195 pages. G. Steinheil, Paris.

NOTE.

The president of the American Gynecological Society has appointed a committee to report at the next annual meeting in Washington, on the present status of obstetrical teaching in Europe and America, and to recommend improvements in the scope and character of the teaching of obstetrics in America.

The committee consists of the professors of obstetrics in Columbia University, University of Pennsylvania, Harvard, Jefferson Medical College, Johns Hopkins University, Cornell University, and the University of Chicago.

Communications from anyone interested in the subject will be gladly received by the chairman of the committee, Dr. B. C. Hirst, 1821 Spruce street, Philadelphia, Pa.

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INDEX TO VOLUME XX OF THE JOHNS HOPKINS HOSPITAL BULLETIN.

Acidosis, Post-anæsthetic, 180.

Alcoholic poisioning, acute experimental, Lesions of the nerve cell and vascular tissues produced by, 139.

Amberg, S., Bleeding from the intestinal tract of an infant in the course of alimentary decomposition in the sense of Finkelstein.—A clinical note, 323.

Anders, J. M., Relative aortic incompetency of muscular origin, 205.

Aneurysm, Dissecting, 9.

Ankylosed joints, The use of animal membrane in producing mobility in, 271.

Aortic incompetency, Relative, of muscular origin, 205.

Appendicitis in the Johns Hopkins Hospital, An analysis of infantile, 31.

Appendix abscess in 27-months child; with an analysis of infantile appendicitis in the Johns Hopkins Hospital, 31.

Aretaeus the Cappadocian, 371.

Army medical corps examinations, 370.

Bacillus mucosus capsulatus, A case of general infection with, followed by an areolar abscess of the liver and general peritonitis. Autopsy, 77.

Baer, W. S., Some results of the injection of Beck's bismuth paste in the treatment of tuberculous sinuses, 318.

Baer, W. S., The use of animal membrane in producing mobility in ankylosed joints, 271.

Baker, F., The two Sylviuses. An historical study, 329.

Barker, L. F., On some of the clinical methods of investigating cardio-vascular conditions, 297.

Barker, L. F. and Sladen, F. J., A small epidemic of jaundice with symptoms of gastro-intestinal catarrh, 310.

Berkley, H. J., Lesions of the nerve cell and vascular tissues produced by acute experimental alcoholic poisoning, 139.

Berkley, H. J., The disposal of the waste of the brain tissues, 180.

Bernheim, B. M., A note on some methods of anastomosing blood-vessels, 116.

Bernheim, B. M., Experimental surgery of the mitral valve, 107.

Bismuth paste, Beck's, Some results of the injection of, in the treatment of tuberculous sinuses, 318.

Bleeding from the intestinal tract of an infant in the course of alimentary decomposition in the sense of Finkelstein.—A clinical note, 323.

Blood-vessels, A note on some methods of anastomosing, 116.

Blumer, G., A report of two cases of osteoplastic carcinoma of the prostate with a review of the literature, 200.

Books received, 29, 62, 94, 159, 191, 224, 295, 360, 391.

Brain tissues, The disposal of the waste of, 180.

Carcinoma, A report of two cases of osteoplastic, of the prostate, with review of the literature, 200.

Cardio-vascular conditions, On some of the clinical methods of investigating, 297.

Cataract extractions, Summary of results obtained and features of interest in two hundred and fifteen consecutive, 377.

Chloroform poisoning. Liver necrosis and repair, 278.

Choked disc, Observations on experimentally induced, 95.

Churchman, J. W., An appendix abscess in a 27-months child; with an analysis of infantile appendicitis in the Johns Hopkins Hospital, 31.

Colloid glands (goitres): their etiology and physiological significance, 131.

Cordell, E. F., Aretaeus the Cappadocian, 371.

Correspondence, 17, 380.

Crowe, S. J., On the excretion of hexamethylenamin (urotropin) in the cerebrospinal fluid and its therapeutic value in meningitis, 102.

Cullen, E. K. and Derge, H. F., The use of silver wire in opening the kidney, 350.

Cushing, H. and Bordley, J., Observations on experimentally induced choked disc, 95.

Davis, S. G., On the effect of narcosis upon the body temperature, 118.

Davis, J. S., The effect of scarlet red in various combinations, upon the epitheliation of granulating surfaces, 176.

Derge, H. F. and Cullen, E. K., The use of silver wire in opening the kidney, 350.

Discussion: Johns Hopkins Hospital Medical Society: Barker, L. F., Fever, 23; Vegetative aortitis with aneurysm of the ascending portion of the aorta, 218; Tumors of the male breast, 220; Use of scarlet red in epitheliation of granulating wounds, 220;—Bloodgood, J. C., Intestinal obstruction, 185;—Cole, R., Fagopyrismus, with report of a case in man, 154;—Cone, C., Use of scarlet red in epitheliation of granulating wounds, 220;—Finney, J. M. T., Intestinal obstruction, 185;—Futcher, T. B., A case of Mikulicz's disease, 89; Relative aortic incompetency of muscular origin, 216; Vegetative aortitis with aneurysm of the ascending portion of the aorta, 218; Exhibition of surgical cases by Dr. Cushing, 291;—MacCallum, W. G., Vegetative aortitis with aneurysm of the ascending portion of the aorta, 218; Diet in typhoid fever, 290; Maury, J. W. D., Intestinal obstruction, 185;—Thayer, W. S., Investigations concerning Rocky Mountain fever, 152; Fagopyrismus, with report of a case in man, 154; Diet in typhoid fever, 290;—West, J. M., The tonsil as a factor in the cause of disease, 89;—Welch, W. H., Investigations concerning Rocky Mountain fever, 152; Intestinal obstruction, 185.

Discussion: Lænnec Society: Hatfield, C. J., The employment of arrested tuberculous patients, 295;—Welch, W. H., Marmorek's serum in the treatment of pulmonary tuberculosis, 295;—Jacobs, H. B., A study of recent educational leaflets, 294;—v. Pirquet, C., Marmorek's serum in the treatment of pulmonary tuberculosis, 294;—Welch, W. H., Tuberculosis of the liver, 294;—Winternitz, M. C., Tuberculosis of the liver, 294.

Donley, J. E., John James Wepfer, a renaissance student of apoplexy, 1.

Epidemic of the Indians of New England, 1616-1620, with remarks on native American infections, 340.

Forster, A. M., The employment of arrested tuberculous cases, 259.

Geraghty, J. T., Persistent bacteriuria, 12.

Gerster, A. G., The life and times of Gerhard van Swieten, 161.

Glycosuria, On the relation of the islands of Langerhans to, 265.

Gundrum, F. F., Post-anæsthetic acidosis, 180.

Hamman, L. and Wolman, S., A further report of the work in the Phipps Dispensary for Tuberculosis of the Johns Hopkins Hospital, 248.

Hamman, L. and Wolman, S., Tuberculin treatment among Dispensary patients, 225.

Hanes, F. M., Multiple hereditary telangiectases causing hemorrhage (hereditary hemorrhagic telangiectasia), 63.

Harrison, P. W., An effort to determine the sensory path from the ocular muscles, 113.

Hewitt, J. H., A case of general infection with *Bacillus mucosus capsulatus* followed by an areolar abscess of the liver and general peritonitis. Autopsy, 77.

Hexamethylenamin (urotropin), On the excretion of, in the cerebrospinal fluid and its therapeutic value in meningitis, 102.

Homans, J., Postoperative pulmonary complications, 125.

Hydrocephalus treated by drainage into a vein of the neck, 110.

Intestinal tract of an infant, Bleeding from the, in the course of alimentary decomposition in the sense of Finkelstein, 323.
Islands of Langerhans, On the relation of, to glycosuria, 265.
Jaundice, A small epidemic of, with symptoms of gastro-intestinal catarrh, 310.
Kidney, The use of silver wire in opening the, 350.
Kober, George M., The influence of sewers and general sanitation upon the prevalence of tuberculosis, 80.
Laboratory technique, Conveniences in, 324.
Lænnec Society prize, 150.
Le Count, E. R., Pleural and pulmonary secondary osteosarcomas, 361.
Lister prize, 150.
Liver necrosis and repair. Chloroform poisoning, 278.
MacCallum, W. G., Dissecting aneurysm, 9.
MacCallum, W. G., On the relation of the islands of Langerhans to glycosuria, 265.
McClure, R. D., Hydrocephalus treated by drainage into a vein of the neck, 110.
Marmorek's serum in the treatment of pulmonary tuberculosis, 253.
Marine, D. and Lenhart, C. H., Colloid glands (goitres): their etiology and physiological significance, 131.
Medical education, Old time, 210.
Meningitis, On the excretion of hexamethylenamin (urotropin) in the cerebrospinal fluid and its therapeutic value in, 102.
Mitral valve, Experimental surgery of the, 107.
"Moderator band" and its relation to the papillary muscles, with observations on the development and structure of the right ventricle, 168.
Moss, W. L., The relation of bovine to human tuberculosis, 39.
Moss, W. L., Tuberculosis—a plan of study, 87.
Muscles, papillary, The "moderator band" and its relation to the, 168.
Narcosis, On the effect of, upon the body temperature, 118.
Note on Committee appointed to report on present status of obstetrical teaching in Europe and America, 392.
Notes and news, 24.
Notes on new books, 25, 59, 90, 130, 154, 186, 220, 296, 325, 360, 381; —Adami, J. G., The principles of pathology, 154;—Adamson, H. G., The skin affections of childhood, with special reference to those of more common occurrence, and their diagnosis and treatment, 90;—Allchin, W. H., Methodus medendi, 27;—Allen, R. W., Vaccine therapy and the opsonic method of treatment, 92;—Analytical index of Volumes I to X of The Medical Review, 61;—Arny, H. V., Principles of pharmacy, 384;—Atkinson, S. A., The law in general practice, 26;—Ballentyne, J. W., Green's encyclopedia and dictionary of medicine and surgery, 155;—Ballet, G., Neurasthenia, 387;—Barwell, H., Diseases of the larynx, 59;—Bashford, E. F., Third scientific report on the investigations of the Imperial Cancer Research Fund, 186;—Beattie, J. M., and Dickson, W. E. C., Text-book of general pathology, 386;—Bickham, W. S., A text-book of operative surgery, 357;—Biennial Report of the Board of Health of the City of New Orleans, 1906-1907, 28;—Blackburn, I. W., Illustrations of the gross morbid anatomy of the brain in the insane, 385;—Bockenheimer, Ph., Clinical surgery, 59;—Bonney, S. G., Pulmonary tuberculosis, 188;—Boyle, H. E., Practical anæsthetics, 59;—Brickner, W. M., 700 surgical suggestions, 386;—Broadbent, W., The writings of Sir William Broadbent, 27;—Brown, D. R., The baby. A book for mothers and nurses, 130; —Brown, W. C., Sprue and its treatment, 27;—Brunton, L., Therapeutics of the circulation, 353;—Bryant, J. D. and Buck, A. H., American practice of surgery, 189;—Buchanan, R. J. M., The blood in health and disease, 386;—Burdetts' Hospitals and Charities, 1909, 383;—Burghard, F. F., editor, A system of operative surgery, 356;—Burton-Fanning, F. M., The open-air treatment of pulmonary tuberculosis, 382;—Butler, G. F., Text-book of materia medica, pharmacology and therapeutics, 390;—Cabot, F., Clinical diagnosis and treatment of disorders of the bladder with technique of cystoscopy, 154;—Camac, C. N. B., Epoch-making contributions to medicine, surgery and the allied sciences, 186;—The Campaign against tuberculosis in the United States, 28;—Campbell, W. F., A text-book of surgical anatomy, 60;—Christopher, S. R. and Bently, C. A., Scientific Memoirs, No. 35. Black-Water Fever, 353;—Clark, I. P. and Diefendorf, A. R., Neurological and mental diagnosis, 190;—Clinical diagrams, 386;—Coakley, C., A manual of diseases of the nose and throat, 93;—Cohnheim, P., Diseases of the digestive canal, 223;—Collected papers of Joseph, Baron Lister, 359;—Cooke, J. B., A manual of obstetrical technique, as applied to private practice, with a chapter on abortion, premature labor and curettage, 91;—Cooper, A., The sexual disabilities of man, 388;—Craig, C. F., The malarial fevers, hæmoglobinuric fever and the blood protozoa of man, 382;—Creighton, C., Contributions to the physiological theory of tuberculosis, 157;—Crichton-Brown, J., Parcimony in nutrition, 187;—Cullen, T. S., Adenomyoma of the uterus, 155;—Deaver, J. B., Surgery of the upper abdomen, 357; —De Garmo, W. B., Abdominal hernia, 358;—Dieffenbach, W. H., Hydrotherapy, 386;—Dieudonné, A., Bacterial food poisoning, 187;—Douglas, R., Surgical diseases of the abdomen, 359;—Dudley, E. C., The principles and practice of gynecology, 91;—Edmunds, A., Glandular enlargement and other diseases of the lymphatic system, 59;—Edwards, A. R., A treatise on the principles and practice of medicine, 391;—Ehrlich, P., Experimental researches on specific therapeutics, 190;—Emerson, C. P., Clinical diagnosis, 327; Essentials of medicine, 93;—Emerson, R. L., Legal medicine and toxicology, 386;—Faith and works of Christian Science, 359;—Findlay, P., Gonorrhœa in women, 61;—Fourth annual report of the Henry Phipps Institute, 25;—Forsyth, D., Children in health and disease, 381; —Fowler, J. S., Infant feeding, 223;—Friedberger and Fröhner, Veterinary pathology, 221;—Friedenwald, J., Dietetics for nurses, 388;—Gant, S. G., Constipation and intestinal obstruction, 358;—Gierlich, N., Studies in paranoia, 391;—Gould, G. M., Concerning Lafcadio Hearn, 220;—Green, C. W., Experimental pharmacology, 384;—Haab, O., Atlas of external diseases of the eye, 389;—Handbook for attendants on the insane, 383;—Hardesty, I., A laboratory guide for histology, 188;—Hare, H. A., Caspari, C. and Rusby, H. H., The National Standard dispensatory, 328;—Hare, H. A., Text-book of practical therapeutics, 391;—Harvey Lectures, 1906-1907, 354;—Hawk, P. B., Practical physiological chemistry, 385;—Hay, J., Graphic methods in heart disease, 356;—Herter, C. A., On infantilism from chronic intestinal infection, 186;—Hewlett, R. T., A manual of bacteriology, 187;—Hogarth, A. H., Medical inspection of schools, 359;—Hunter, W., Severest anæmias, vol. i, 356;—Hyde, J. M., A practical treatise on diseases of the skin, 389;—International clinics, 18th series, iii, 61; iv, 93; 1909, ii, 382; iii, 387;—Jackson, G. T., The ready reference handbook of diseases of the skin, 28;—Jordan, E. O., A text-book of general bacteriology, 223;—Keen, W. W., Surgery: its principles and practice, 189;—Kelly, H. A., Appendicitis and other diseases of the vermiform appendix, 357;—Kelly, H. A. and Noble C. P., Gynecology and abdominal surgery, 326;—Kerley, C. G., Treatment of the diseases of children, 388;—Kerr, L. G., The baby: its care and development, 29;—Knopf, S. A., Tuberculosis, 382; —Koptezky, S. J., The surgery of the ear, 327;—Latham, A., A dictionary of medical treatment for students and junior practitioners, 92;—Le Gendre, P. and Broca, A., Traîté pratique de therapeutique infantile medico-chirurgical, 190;—Lexer, E., General surgery, 358;—Lloyd, W., Hay-fever, hay-asthma—its causes, diagnosis and treatment, 187;—Lockwood, C. B., Aseptic surgery, 381;—McIsaac, Isabel, Hygiene for nurses, 92;

—Mackenzie, J., Diseases of the heart, 354;—Magennis, E., Dictionary of ophthalmic terms, 387;—Mayou, S., Diseases of the eye, 60;—Medical and surgical reports, New York City Hospital, 386;—Medical and surgical report of the Presbyterian Hospital in the City of New York, 383;—Medical annual, 383;—Meller, J., Ophthalmic surgery, 60;—Meyer, W., Bier's hyperemic treatment in surgery, medicine and the specialties, 60;—Miller, C. C., The cure of rupture by paraffin injections, 29;—Mord, Jules, Manuel des gardes-malades dans les hôpitaux pour maladies mentales, 26;—Mortality Statistics, 1907, 383;—Moynihan, B. G., Abdominal operations, 93;—Muir, R., Studies on immunity, 388;—Mumford, J. G., Surgical memoirs and other essays, 60;—Munro, H. S., A hand-book of suggestive therapeutics, applied hypnotism and psychic science, 91;—New and non-official remedies, 1909, 186;—Nineteenth annual report New York State Commission in Lunacy, October 1, 1906, to September 30, 1907, 25;—Nuttall, G. H. F., Parisitology, 59; Ticks, a monograph of the Ixodoidea, 130;—Ophthalmic year-book, 384;—Osborn, H., Economic zoology, 92;—Osler, W., An Alabama student and other biographical essays, 61; The principles and practice of medicine, 352; Thomas Linacre, 26;—Osler, W. and McCrae, T., Modern medicine: its theory and practice, iv, 25; vi, 390;—Packard, F. R., Diseases of the nose, throat and ear, 188;—Park, W. H., Pathogenic micro-organisms, including bacteria and protozoa, 91;—Physicians visiting list, 1909, 59;—Politzer, A., Text-book of diseases of the ear, 385;—Progressive medicine, 1908, iii, 27; iv, 60; 1909, i, 186; ii, 382; iii, 387;—Report from the pathological dep't Central State Hospital for the Insane, 325;—Report of Welcome Research Laboratories, Khartoum, 384;—Report on plague in the Gold Coast in 1908, 383;—Report to the Government of British Honduras upon the outbreak of yellow fever in that colony in 1905, 359;—Reports of the Sleeping Sickness Commission of the Royal Society, No. IX, 356;—Robson, A. W., Mayo and Cammidge, P. J., The pancreas: its surgery and pathology, 27;—Ross, R., Report on the prevention of malaria in Mauritius, 189;—Ruhräh, J., A manual of diseases of children, 91;—Saleeby, C. W., Parenthood and race culture, 389;—Schamberg, J. F., Diseases of the skin and the eruptive fevers, 130;—Schmidt, R., Pain: its causation and diagnostic significance in internal diseases, 28;—Scientific memoirs by officers of the medical and sanitary departments of the Government of India, Nos. 32, 33 and 34, 189;—Selected papers by the staff of the Massachusetts General Hospital, 384;—Shoemaker, W. T., Retinitis pigmentosa, 384;—Sleeping Sickness Bureau. Bulletin No. 1, 59;—Smith, E. A., Suture of arteries, 390;—Snyder, H., Human foods and their nutritive value, 60;—Starling, E. H., The fluids of the body, 384;—Stitt, E. R., Practical bacteriology, 385;—Stoddart, W. H. B., Mind and its disorders, 388;—Strong, F. F., High frequency currents, 381;—Sutherland, G. A., A system of diet and dietetics, 326;—Taylor, H. L., Orthopedic surgery for practitioners, 357;—Thomson, J., Guide to the clinical examination and treatment of sick children, 92;—Transactions of the Society of Tropical Medicine and Hygiene, 383;—Tuberculosis in the United States, 61;—Tweedy, E. H., Rotunda practical midwifery, 386;—Vale, F. P., Fiske Fund Prize Dissertation No. LI. Has surgical treatment lessened the mortality from appendicitis?, 61;—Wabasse, J. P., Medical sociology, 388;—Warfield, L. M., Arteriosclerosis, 130;—Wile, Ira S., Blood examination in surgical diagnosis, 187;—Williams, W. R., The natural history of cancer with special reference to its causation and prevention, 29;—Williamson, R. T., Diseases of the spinal cord, 385;—Wolff-Eisner, A., Frühdiagnose und Tuberculose Immunität unter Berücksichtigung der neuesten Forschungen, 328;—Wolsey, G., Applied surgical anatomy, 59;—Wood, H. C., Therapeutics: its principles and practice, 61.

Osteosarcomas, Pleural and pulmonary secondary, 361.

Ovary, Primary melanotic sarcoma of the, 314.

Parathyroid gland, Tuberculosis of, and its relation to the occurrence to tetany in tuberculous meningitis, 269.

Pellagra in Maryland, Note on, 193.

Perkins, R. G., Conveniences in laboratory technique, 324.

Phipps Dispensary for Tuberculosis of the Johns Hopkins Hospital, A further report of the work in the, 248.

von Pirquet, Clemens, Ph. B., M. D., 150.

Pituitary gland, Its relation to the maintenance of life, 105.

Pollack, F., The acquired venereal infections in children, 142.

Proceedings of the Johns Hopkins Hospital Medical Society: Anders, J. M., Relative aortic incompetency of muscular origin, 216;—Baetjer, W. A., Study of a house epidemic of typhoid fever, 152;—Barker, L. F., Exhibition of a case of alopecia universalis, 90;—Bloodgood, J. C., Surgical cases, 153;—Boggs, T. R., Case of ichthyosis hystrix, 150;—Bordley, J., The tonsil as a factor in the cause of disease, 88;—Churchman, J. W., Exhibition of surgical cases, 89;—Clough, P. W., The Wasserman reaction in the diagnosis of syphilis, 289;—Cole, R. and Cecil, A. B., The axillary diastolic murmur in aortic insufficiency, 23;—Crowe, S. J., The prophylactic use of hexamethylenamin in cerebrospinal meningitis, 154;—Cushing, H., Cases of brain tumor, 22; The prophylactic use of hexamethylenamin in cerebrospinal meningitis, 154; Exhibition of surgical cases, 291;—Davis, J. S., Use of scarlet red in epitheliation of granulating wounds, 220;—Griffin, G., Tumors of the male breast, with report of an unusual case, 218;—Griffith, F. W., Etiology of movable kidney, 293;—Hamman, L., Treatment with tuberculin in the Dispensary, 293;—Holtzapple, G. E., Vegetative aortitis with aneurysm of the ascending portion of the aorta, 217;—Howland, J., An experimental study of the metabolism and pathology of delayed chloroform poisoning, 152;—Jones, H. C., The electron and some of its applications, 183;—Lambert, C., Brain tumors: A preliminary discussion, 291;—MacCallum, W. G., Fever, 23; Changes in the trachea and bronchi from syphilis, 290;—Maury, J. W. D., Intestinal obstruction: an anatomical study, 184;—Penrose, C. A., A study of leprosy with especial reference to its occurrence in the Bahama Islands, 89;—Pleasants, J. H., Obstructions of the inferior vena cava, 292;—Randolph, R. L., A case of Mikulicz's disease, 89;—Reik, H. O., Some new illustrations of aural anatomy, 23;—Richardson, E. H., Report of five gynecological histories, 18;—Ricketts, H. T., Investigations concerning Rocky Mountain fever, 151;—Rowntree, L. G., Subcutaneous purgatives, A clinical study on phenoltetrachlorphthalein, 293;—Sarason, R., A new system of open air construction for hospitals and tenement houses, 90;—Sladen, F. J., Case of acrocyanosis following cerebro-spinal meningitis, 22;—Smith, H. L., Fagopyrismus, with report of a case in man, 153;—Strouse, S., Diet in typhoid fever, 289;—Thayer, W. S., Pellagra, 293;—Thomas, H. M., Hemiplegias of the first decade, 184;—Whipple, G. H., Ankylostomiasis, 152.

Proceedings of the Lænnec Society: Forster, A. M., The employment of arrested tuberculous cases, 295;—Hatfield, C. J., A study of recent educational leaflets, 294;—Thayer, W. S., Tuberculosis of the liver, 294;—Wolman, S., Marmorek's serum in the treatment of pulmonary tuberculosis, 294.

Prostate, A report of two cases of osteoplastic carcinoma of, with a review of the literature, 200.

Protozoology, The place of, in the medical school curriculum, 74.

Pulmonary complications, Postoperative, 125.

Reford, L. L. and Cushing, H., Is the pituitary gland essential to the maintenance of life?, 105.

Retzer, R., The "moderator band" and its relation to the papillary muscles, with observations on the development and structure of the right ventricle, 168.

Sarcoma, Primary melanotic, of the ovary, 314.

Scarlet red, The effect of, in various combinations, upon the epithelialion of granulating surfaces, 176.
Schultz, Oscar, T., The place of protozoology in the medical school curriculum, 74.
Sensory path, An effort to determine the, from the ocular muscles, 113.
Silver wire, The use of, in opening the kidney, 350.
Sladen, F. J. and Barker, L. F., A small epidemic of jaundice with symptoms of gastro-intestinal catarrh, 310.
Small-pox, Dr. Adam Thomson, the originator of the American method of inoculation for, 49.
Smith, H. L., Dr. Adam Thomson, the originator of the American method of inoculation for small-pox, 49.
Summaries or titles of papers by members of the Hospital Staff appearing elsewhere than in the Bulletin, 52.
van Swieten, Gerhard, The life and times of, 161.
Sylviuses, The two, 329.
Telangiectases, Multiple hereditary, causing hemorrhage (hereditary hemorrhagic telangiectasia), 63.
Thayer, W. S., Note on pellagra in Maryland, 193.
Theobald, S., Summary of results obtained and features of interest in two hundred and fifteen consecutive cataract extractions, 377.
Thomson, Dr. Adam, the originator of the American method of inoculation for small-pox, 49.
Trudeau, Edward L., M. D., 85.
Tuberculin treatment among Dispensary patients, 225.
Tuberculosis, The influence of sewers and general sanitation upon the prevalence of, 80.
Tuberculosis of the parathyroid gland and its relation to the occurrence of tetany in tuberculous meningitis, 269.
Tuberculosis—a plan of study, 87.
Tuberculosis, pulmonary, Marmorek's serum in the treatment of, 253.
Tuberculosis, The relation of bovine to human, 39.
Tuberculous cases, arrested, The employment of, 259.
Tuberculous sinuses, Some results of the injection of Beck's bismuth paste in the treatment of, 318.
Venereal infections in children, The acquired, 142.
Ventricle, right, The "moderator band" and its relation to the papillary muscles, with observations on the development and structure of the, 168.
Walsh, J. J., Old time medical education, 210.
Wepfer, John James, a renaissance student of apoplexy, 1.
Whipple, G. H. and Sperry, J. A., Chloroform poisoning. Liver necrosis and repair, 278.
White, W. C., The municipal management of tuberculosis, 274.
Williams, H. U., The epidemic of the Indians of New England (1616-1620), with remarks on native American infections, 340.
Winternitz, M. C., Primary melanotic sarcoma of the ovary, 314.
Winternitz, M. C., Tuberculosis of the parathyroid gland and its relation to the occurrence of tetany in tuberculous meningitis, 269.
Wolman, S., Marmorek's serum in the treatment of pulmonary tuberculosis, 253.

ILLUSTRATIONS.

John James Wepfer (Plate I, Figs. 1-2), 2.
Dissecting aneurysm (Plate II, Figs, 1-3), 10.
An appendix abscess in a 27-months child (Charts 1-3), 35-38.
Multiple hereditary telangiectases (Plates III-IV, Figs. 1-5), 72.
Areolar abscess of the liver (Plates V-VI, Figs. 1-5), 78.
Coronal section of cranium, 98.
Experimental choked disc (Plates VII-IX, Figs. 2-14), 100.
The excretion of urotropin in the cerebrospinal fluid (Plate X, Figs. 1-4), 104.
Drainage of hydrocephalus into vein of neck (Figs. 1-3), 111.
Some methods of anastomosing blood vessels (Figs. 1-11), 116-117.
Effect of narcosis upon the body temperature (Charts 1-3), 119-121.
Gerhardt van Swieten (Plate XI), 162.
Section of right ventricle and "moderator band" (Diagrams 1-6), 169.
Use of scarlet red in epithelialion of granulating surfaces (Plates XII-XV, Figs. 1-9), 176.
Pellagra (Plates XVI-XVII, Figs. 1-6), 196; 198.
Deformity of clavicle and right side of chest (Plate XVIII), 202.
Tuberculin treatment (Charts 1-19d), 236-247.
Mobility in ankylosed joints (Plates XIX-XX, Figs. 1-12), 273.
Liver necrosis and repair (Plates XXI-XXIII, Figs. 1-12), 228.
Step-like line of Kroenig, 298.
Electrophonogram of the heart sounds, 299.
Schematic representation of the roentgenoscopic view of the thorax, 299.
Cardio-vascular shadow, 300.
Frontal transillumination of thorax, schematic, 300.
Thorax in oblique transillumination, 300.
Dorso-ventral illuminations (Figs. 7-13), 301.
Schematic representation of orthodiagraph, 301.
Orthodiagrams (Figs. 15-16), 301.
Polygraph of Mackenzie and Jacquet's cardiosphygmograph, 302.
Comparison of cardiograms, 302.
Carotid arteriogram, 303.
Phlebograms (Figs. 21-25), 303.
Phlebo- and arterio-grams (Figs. 26-27-32), 304.
Pulsus alternans in paroxysmal tachycardia, 304.
Systolic tracings (Figs. 29-31), 304.
Pulsus irregularis perpetuus, 305.
Tonometer of von Recklinghausen (Figs. 34-35), 306.
Erlanger's apparatus (Figs. 36-37), 306.
Apparatus of Hooker and Eyster, 307.
Distribution of cardiac electricity on the surface of the body, 307.
Normal electrocardiogram and analysis of (Figs. 40-42), 308.
Electro-cardiograms (Figs. 43-45), 309.
So-called splintering of the curve in myocardial disease, 309.
Galvanometric portion of an electro-cardiographic station, 309.
Primary melanotic sarcoma of the ovary (Plates XXIV-XXV, Figs. 1-7), 316.
Treatment of tuberculous sinuses with Beck's bismuth paste (Plates XXVI, Figs. 1-3), 322.
A dissection as understood in the fifteenth century, 332.
Muscles of the abdomen as shown in early illustrations, 332.
Jacobus Sylvius, 333.
View of the ventricles of the brain, 335.
View of a dissection of the brain, 335.
View of a dissection of the fourth ventricle of the brain, 336.
Franciscus de la Boe Sylvius, 339.
Pleural and pulmonary secondary osteosarcomas (Plates XXVII-XXIX, Figs. 1-11), 370.
Reverse-curve iridectomy scissors, 377.

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